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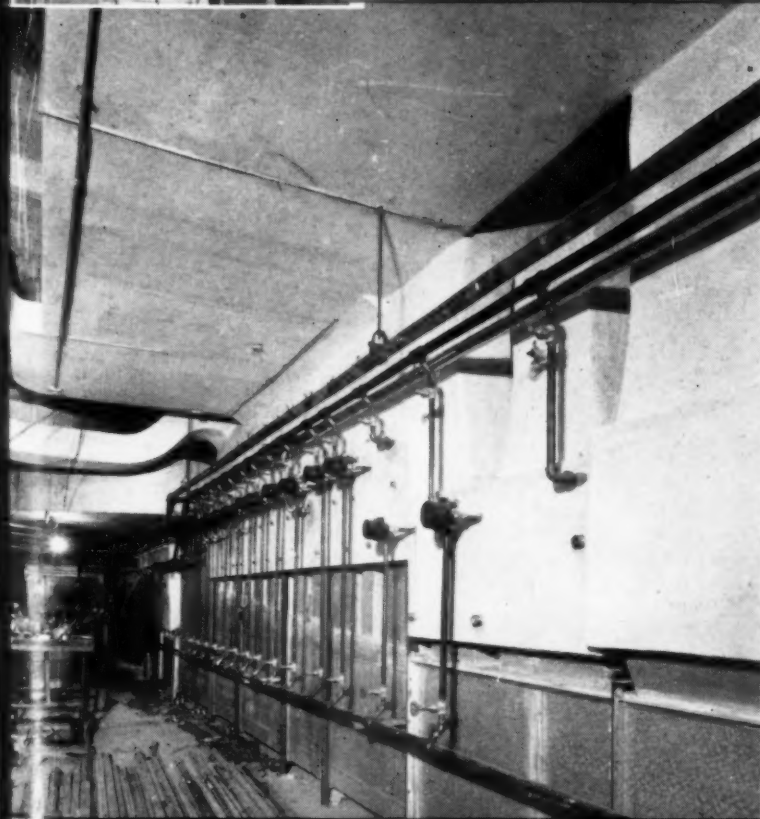
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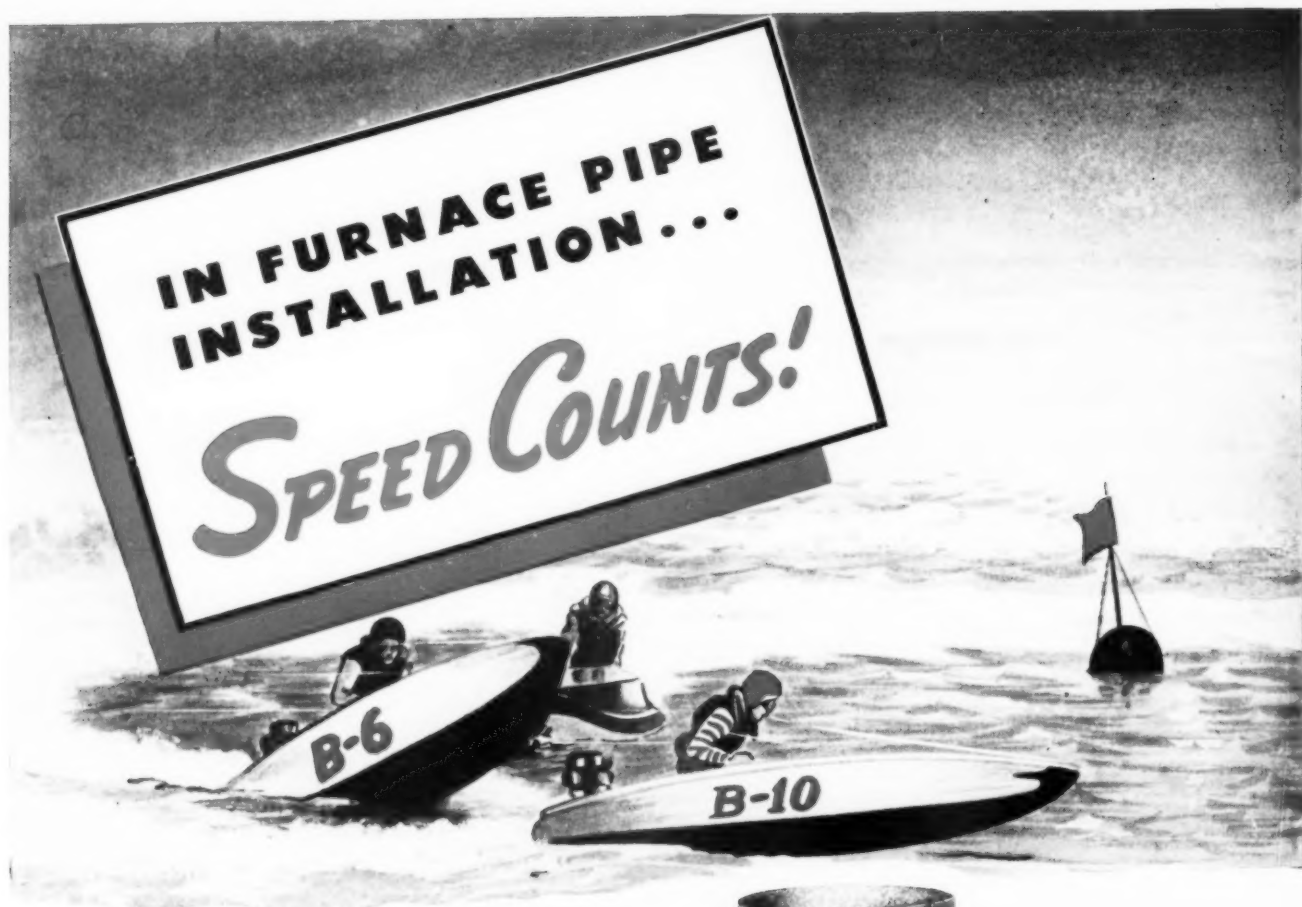
AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING -- SHEET METAL CONTRACTING

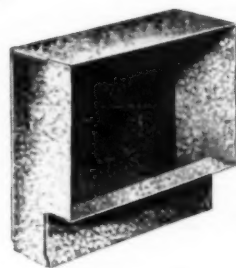
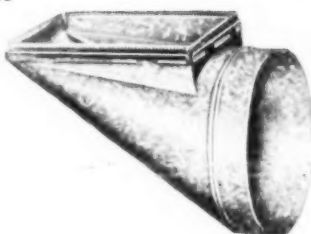
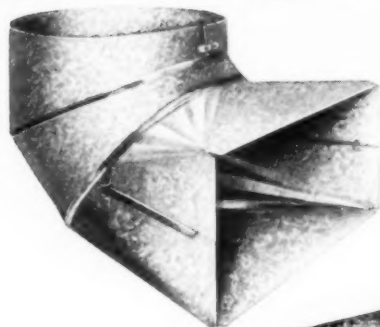


JUNE, 1947

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Steel Floor Warm Air Panel	- - - - -	Page 61
Modern Industry Depends on Exhaust Systems	- - - - -	Page 75



Labor costs go down and profits go up when you use C&L Lamneck furnace pipe and fittings! Each part is precision engineered for accurate fit. No time is wasted in cutting and trimming—fittings go into place smoothly and quickly. For easier, faster installations at greater profit, specify C&L Lamneck dependable furnace pipe and fittings. Write for catalog and name of the C&L jobber nearest you.



ALWAYS

Specify



Lamneck
TRADE MARK

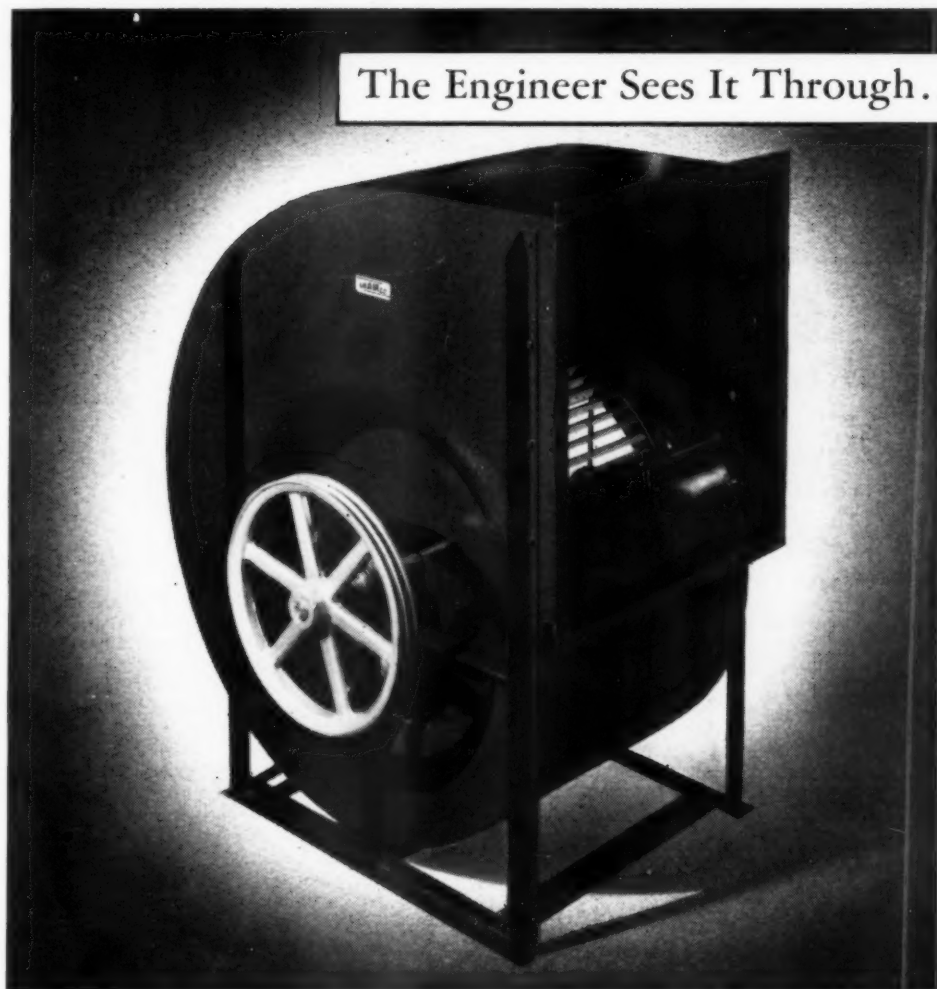
CLAYTON & LAMBERT MFG. CO.

17-0 DIXIE HIGHWAY • LOUISVILLE 10, KY.

Other C&L Products: C&L Blow Torches, Fire Pots; C&L Hoffman Water Heaters; Monarch Builders Finish Hardware; Buckeye Corn Cribbs, Grain Bins; Silver Shield Silos.

**FURNACE PIPE
AND FITTINGS**

The Engineer Sees It Through...at



Blowers...built to serve and serve!

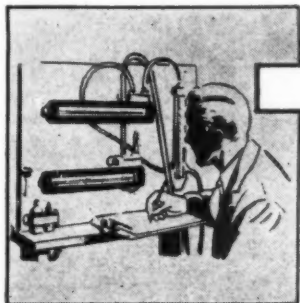
Hheavy gauge steel, hydraulic riveting, and feather-sensitive balance all help to make good, long-lasting blowers. But the factor that makes usAIRco blowers *exceptionally* long-lived and trouble-free cannot be seen in the frame, the cone, the blades, the backplate, or the bearings. That factor is *engineering follow-through*.

In specifying usAIRco blowers, you buy much, much more than merely fine machinery. You get shrewd, expert knowledge of air-movement. You have as working partners men who know the job and will help you see it through. Call us in on your next blower installation, and see what this means!

UNITED STATES AIR CONDITIONING CORPORATION

Minneapolis 14, Minnesota

Factory Representatives in Principal Cities



TESTED.....AND PROVED

Before any usAIRco blower goes to the shipping dock it must pass every test established by usAIRco design engineers. You can depend on usAIRco blowers to meet your needs with extra margins of performance.



Plus

*Cooperative Engineering
Counsel*

Available to your air conditioning, heating or ventilating problems is the advice and counsel of the engineering staff of usAIRco. With a background of nearly twenty-five years, it is one of the most experienced in the industry. We invite you to use it freely and fully.

AMERICAN

with which are merged
FURNACES
SHEET METALS
Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

ARTISAN

In This Issue

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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ON PAGE 54 Codes Committee Chairman W. D. Redup explains the new heating code and manual for large structures. With the publication of this Manual No. 9, the NWAH&AC Ass'n now offers the industry a complete range of design manuals covering all types of warm air heating systems from the simplest gravity job to the large structure.

In addition, there are now available simplified work sheets for residential heating by the use of which the engineering design is reduced to minimum-time fundamentals.

With this wealth of assistance now available, the next step is to get all contractors to use these methods so that, as quickly as possible, uniform design based upon established and proven principles will eliminate the inadequately engineered installation. This, in turn, will go far to remove the poor jobs which are creating dissatisfaction with warm air heating.

Of the several types of warm air panel heating tested and reported in AA issues since last October, one of the most interesting and one of the most favorable under test is the steel floor-crawl space installation reported on page 61.

The important features of this combination are: (1) relatively quick response to heat demand; (2) complete panel-convection operation with full ventilation; (3) through the convection system adequate humidification, filtering, and mild weather control; (4) uniformity of temperatures floor to ceiling and room to room.

Founded 1880

JUNE, 1947

Volume 116, No. 6

*"Not Gaudy, But—
A HEAVYWEIGHT in
FACT and
Performance"*



SYNCHROMATIC

WORLD'S FINEST HEATING EQUIPMENT

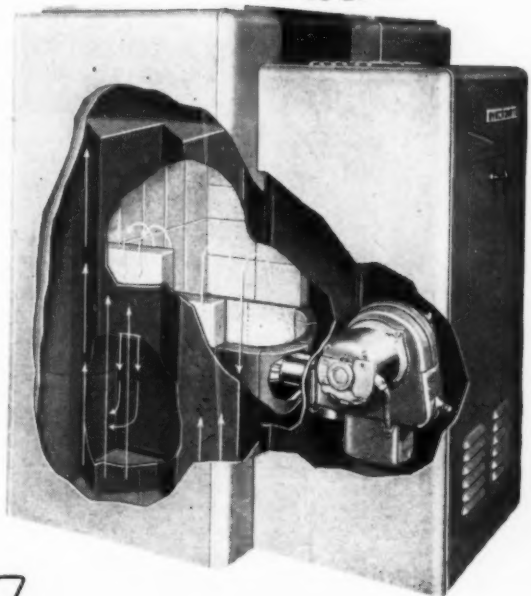
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COUNTER FLOW →

Unequalled FURNACE Engineering
and manufacturing protection
for your customers' satisfaction



See your Jobber about
getting a DEALERSHIP
for you...America's Pre-
mium FURNACE Line
of COAL - OIL - GAS
FURNACES at NO
PREMIUM PRICES



— OR WRITE —

Syncromatic Corporation

WATERTOWN, WISCONSIN



Dealers say this positive, efficient fan control opens up a big profitable new market! New Sampsel Fan Thermostat (T202) provides fully automatic thermostatic control of cooling and exhaust fans for residential or commercial use. Operates on 115V, for motors of 1/2 hp or less. Operating range 70°-90°. 2° differential.

New T202 FAN THERMOSTAT

POSITIVE THERMOSTATIC CONTROL FOR

Ventilating fans
Attic fans
Window fans
Evaporative coolers
Kitchen fans
Exhaust fans

VIBRATION-PROOF

Movement or vibration can't affect accuracy! Mount directly on fan frame if desired.



Simplified, new universal-type RELAY AND TRANSFORMER (RT600)

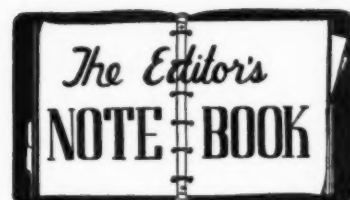


Compact, rugged Relay and Transformer of many applications. Designed for thermostatically controlled motors on blowers, fans, oil burners and stokers. Rated 115V, 60 cycle. 7.4 amps full load and 44.4 amps locked rotor motor current. Write for details.

SAMPSEL TIME CONTROL, Inc., Spring Valley, Illinois



Canadian Sales Distributor: PEASE FOUNDRY CO., LTD. Toronto 1, Canada



Building Costs

Official Government figures show that building materials are still rising in price. A recent issue of "Construction," published by the U. S. Department of Labor, shows that the cost of labor and materials in the standard house in November, 1946, was 56.9 per cent higher than the average month in the 1935-1939 period, and has been increasing each month since November.

If your house is approximately ten years old, therefore, its probable normal value is approximately 56.9 per cent more than when it was built, less depreciation, of course. Material costs are 53.8 per cent higher and labor 63.1 per cent higher now.

If it is 20 years old, the building materials that went into it are 45.5% higher than in 1926.

Lumber has had the highest relative increases. In November, 1946, its index stood at 213.9 in comparison with the base of 100 in 1935-1939, or 113.9 per cent higher. Paint and paint materials were 86 per cent higher, plumbing and heating 40.8, and brick and tile 42.1.

Mighty Motors

AA readers who have been losing sleep—and hair—trying to find one, just one, fractional horsepower motor for that forced air job which is working on gravity in Mrs. Smith's house may be interested (but not encouraged) to know that four titanic motors of 65,000 horsepower each are nearly completed for the U. S. Bureau of Reclamation. They will pump water at Grand Coulee dam.

Each motor is as large as a six room house—25 feet high, 100 feet around at the base, weigh 325 tons and require a force equal to the pulling power of 30 automobiles for starting purposes—some drain on the line.

It adds little to our worries to know that the pumps these motors will power can supply one glass of water for every man, woman and child in the United States every three minutes.

Big Tax For What?

His "astonishment" upon finding that his Federal tax was 37 times as great as his local tax was recently communicated to Congress by W. A. Robertson, of Pittsburgh, chairman of Westinghouse Electric Corp.

He said he paid \$746,717 Federal tax from 1942 through 1946 while all other taxes for the same period were \$20,200, adding:

"This \$20,200 paid for all public school facilities, all police protection, and sanitary service.

"Unless we have embarked openly on a policy of confiscation of property of the citizens, Federal taxes must be reduced until they are in line with other taxes."

**better
equipment
builds
easier
sales**

**AVAILABLE
NOW
Complete with Burner**



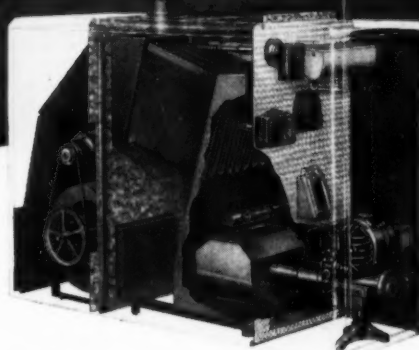
MEYER OIL-FIRED AIR CONDITIONER

Here's today's best answer to the demand for fully automatic home heating! Immediate combustion is achieved by exclusive and proven stainless steel combustion chamber. Makes installation easy! Special tubular heating element for more efficient heat interchange. Air is heated, filtered, humidified, and positively circulated. Mechanical cooling may be included at time of installation or later. WEIR-MEYER equipment is available on a profit-protecting franchise. Write — your area may be "open."

THE MEYER FURNACE COMPANY

Manufacturers of steel furnaces and air conditioners for **GAS-OIL-COAL**. Offices: Peoria 2, Ill.
Factories: Peoria and Peru, Illinois

WEIR-MEYER means modern heat



The MEYER is modern inside and out! Its stream-lined beauty is matched by its efficient performance. Heating section welded into one integral unit—no chance for any smoke or fumes to leak into the air stream.



Gas-fired
Hi-boy



Gas-fired
Air Conditioner



Gas-fired
Gravity



Oil-fired
Hi-boy



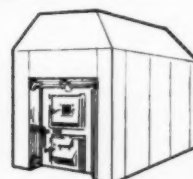
Oil-fired
Air Conditioner



Weir
Steel furnace

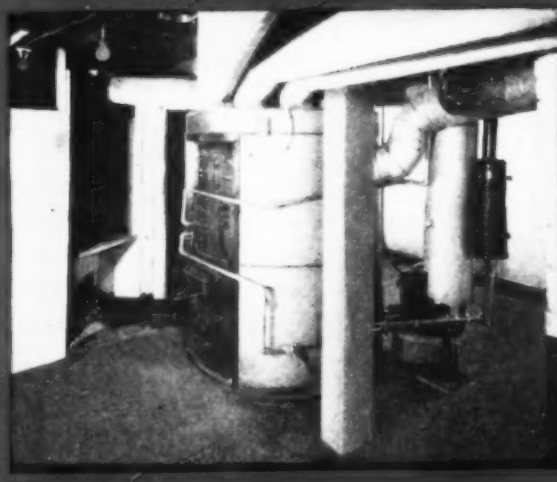


Coal-fired
Air Conditioner



Industrial & commercial
heating equipment

EASIER STOKER SELLING



—through planned promotion and mechanical superiority

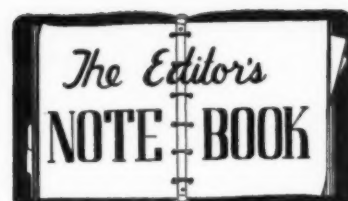
There are big differences in the mechanical construction of automatic coal stokers. Through a program of laboratory development, Link-Belt has discarded for more modern features—things that other stokers still have. Link-Belt has for example, automatic air volume control, the Air Meter, (no manual setting after installation); sectional tuyeres; elimination of cleanout tube; automatic cutoff; elimination of deadplates on commercial models; and many other features.

This means easier selling and more satisfied customers; consequently greater profits per hour and per dollar invested in the stoker business. Let us tell you more about it.

LINK-BELT COMPANY, Stoker Division
2410 W. 18th St., Chicago 8, Illinois

Send data to _____

LINK-BELT
Magic Flame and Power-Flex
STOKERS



Heating Codes

American Artisan:

Our local association is endeavoring to formulate a code to cover the installation of heating equipment in our city. We understand there are codes wherein the contractor is licensed in operation in Fort Wayne, Sioux City, Minneapolis, Columbus and Dayton, Ohio. Can you furnish us details and information on these codes or others you may know of?

The installation of heating equipment here is being so botched and murdered that unless steps are taken to correct the situation, the legitimate contractor will be handicapped for years to come.

A. H. B., N. Y.

A. H. B.:

There are in operation at present warm air heating codes in the towns you list—if you will write to the Building Department of each city you can get a copy of its code—in some cases free of charge, in other cities at a nominal cost.

May we suggest a simpler way to handle your problem is to incorporate in your building code the statement: "Gravity or forced warm air heating systems shall be designed and installed in accordance with the suggested code and ordinance of the National Warm Air Heating & Air Conditioning Ass'n, as set forth in the association's Manuals Number 5 and 7."

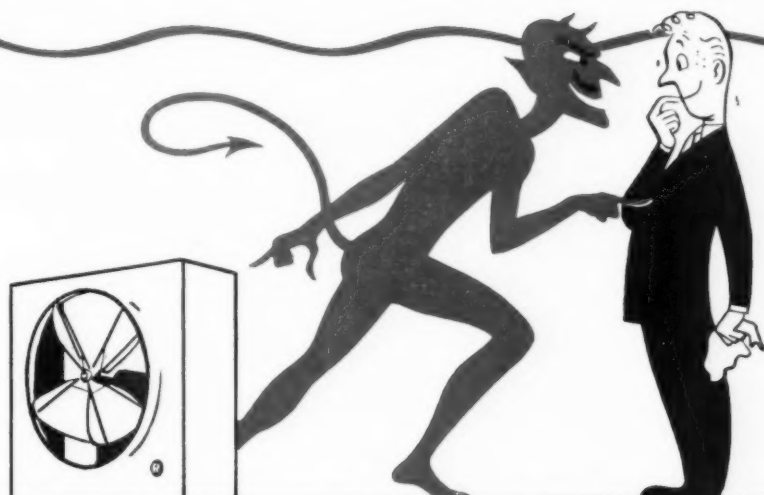
Some city laws will not permit regulation under such a statement and insist on the code being included in full. For such cities the association has included in Manuals 5 and 7 a completely worded ordinance form which you can insert bodily.

You can obtain copies of Manuals 5 and 7 from George Boeddener, Managing Director, National Warm Air Heating & Air Conditioning Ass'n, 145 Public Square, Cleveland, Ohio.

Orchids for Fifteen Cents

Readers who like the exotic—and very expensive—orchid, may be interested in knowing that Juan Pastor, Doctor of Science and Doctor of Botanic Medicine of the South American No. 1 Botanical Experimental Station at Quito, Ecuador, South America, is now offering those who wish to raise orchids in their own homes a packet of orchid seed, accompanied by complete instruction showing how to propagate orchids in your own home, winter or summer. No money is needed, but fifteen cents in loose U. S. postage, will be appreciated to help defray the cost of collecting, handling, packing and mailing the seed. Doctor Pastor says that if you order by air mail, allow six weeks for delivery, but if you order by ordinary mail, allow two or three months for the arrival of the seeds. Airmail postage to Ecuador is ten cents and ordinary postage three cents.

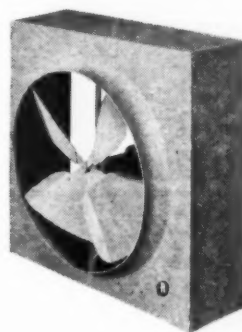
HOT WEATHER does your selling job... when you carry RHEEM cooling products



Hot weather's the salesman that brings profits rolling into your store when you carry the Rheem line of cooling products. For Rheem has a cooling unit to bring comfort in any summer climate.

IN HUMID REGIONS...

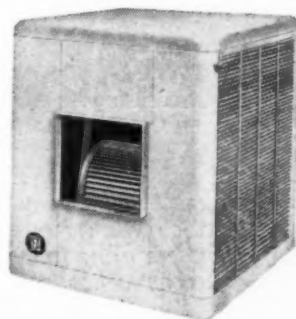
the RHEEM ATTIC FAN clears the accumulation of stale air from a home, office or restaurant. It sweeps out the stale air and replaces it with cool, fresh air. It's scientifically designed, easy to install, economical to operate. Here's a real sales booster that hot weather sells for you.



IN ARID REGIONS...

the RHEEM EVAPORATIVE COOLER brings a cool, humidified "inside climate" to any home or office, no matter how hot and dry it gets outside. It draws the hot, outside air through moistened filters, cooling and humidifying it. Then force circulates it through the whole space. Here's summer-time comfort that means quick sales and big profits for you.

So let summer be your star salesman this year. He'll do the work for you . . . you collect the profits. Call your plumbing and heating jobber right away and get this Rheem line of cooling products into your store. Then watch your profits come rolling in. Call him . . . TODAY. And for full information, write Rheem, 570 Lexington Avenue, New York 22, N. Y.



RHEEM...making houses into homes



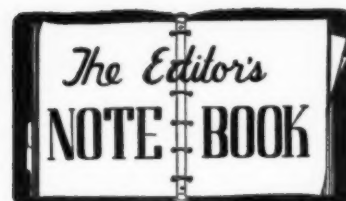
A Mercoid Product

The Mercoid Sensatherm is emerging in this post-war period unexcelled in its simple beauty, with its appealing lifetime lustrous natural metallic finish. There is no lacquer coating to become dull, nor can it ever tarnish. It holds its newness in appearance indefinitely. No polishing or scrubbing is ever necessary—simply wipe off any accumulated dust or dirt with a cloth,

And speaking of performance, this instrument still remains unmatched for its even room temperature control. There are many factors in its design and construction contributing to its long life and positive operation, particularly the hermetically sealed mercury switch. Summing up its appearance and performance, it is truly the aristocrat among thermostats.

Complete Mercoid Catalog sent upon request.

THE MERCOID CORPORATION
4201 BELMONT AVENUE • CHICAGO 41, ILLINOIS



Standard Practice in S. M. Work

Inquiries are received from time to time asking to buy a copy of *Standard Practice in Sheet Metal Work*—the “guide” produced by the old National Sheet Metal Contractors Ass’n. This book is long since out of print and out of circulation excepting in second hand book stores which pick up scattered copies. The book cannot be reprinted because the drawings, plates, etc., were destroyed in a fire some years ago.

To all who inquire, AA answers that a considerable amount of the data the industry is now interested in is contained in an AA booklet, “*Correct Practice in Industrial Sheet Metal Work*.” This is a compilation of dozens of articles from AA, arranged by types of work, and covering practically every phase of fume removal, dust collecting, ventilation, etc. AA will gladly furnish details on request.

Pre-Fabs Ruralized

Farmers can now buy a variety of ready-made metal barns, hog-houses, hen coops, manufacturers say—and one president of a large steel concern believes “practically all structures on commercial farms will eventually be pre-fabricated.”

Rador—The Perfect Climate

Rador, a war-developed heating modulation system, is hailed as the perfect answer to temperature control, and is getting its first peacetime application in railroad cars on the Chesapeake and Ohio Railroad. The Rador control system consists of a system of especially designed thermostats, each with its own search area, each thermostat upon encountering any deviation from the desired temperature automatically alerts the heating equipment and corrects the condition in a zone reaction.

Each car is horizontally zoned to recognize such factors as speed, wind velocity, insulation, sun load, and number of passengers, and is zoned vertically to establish the relationship between overhead and floor heat. Distribution is obtained primarily through panel radiation located at the sides of the car. The heat rises through a duct from the side wall, with partial discharge occurring at the window sill. This provides a thin heat veil over the cold window glass. The remainder of the heat passes out through continuous ducts, making the entire side wall a panel. Thus approximately 25 per cent of the side wall heat is used as a panel and the balance is discharged to mix with car air in gravity circulation. The system provides for warm floors by means of heating coils placed below the floor. The heating medium is steam.

Lockformer

"cost of equipment
amortized in three years . . ."

5 days

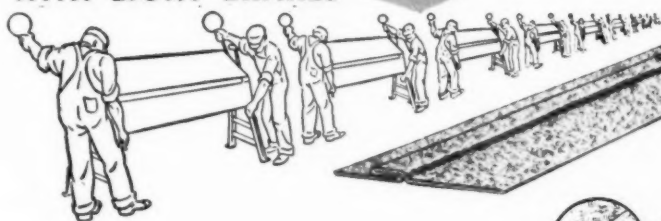


Instead of paying for itself over a period of several years, the LOCKFORMER does it in several days . . . many times, in fact, out of savings made on a single job.

It makes Pittsburgh Locks (and other seams) many times as fast as by hand methods—requires no special training to operate—takes up very little shop space—and keeps going year after year with no maintenance other than an occasional lubrication.

IF YOUR SHOP has expanded to the point where additional Lockformers are needed, or if you plan on adding Duct work to your other sheet metal operations, your Lockformer Jobber would like to have your order as far in advance as possible.

**ONE MAN WITH A LOCKFORMER CAN MAKE MORE
PITTSBURGH LOCKS THAN SIXTEEN MEN
WITH EIGHT BRAKES**



LOCKFORMERS HANDLE ALUMINUM, TOO

THE LOCKFORMER CO.

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

THARCO IS BEST

Tharco Asbestos Furnace Cement provides a high degree of adhesion and heat resistance. It never shrinks, checks or powders when properly applied. Tharco seals both sides of the joint, making it gastight and smokeless, yet it allows for all normal expansion and contraction. Scientifically compounded of the finest materials, by the secret Armstrong formula, Tharco is pronounced the best furnace cement by men who know.



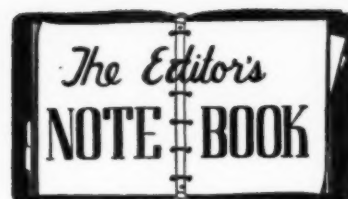
FOR NEW FURNACES

Leading furnace manufacturers use and recommend Tharco Asbestos Furnace Cement because they know they can depend upon it to measure up to the high standards of their products.

FOR FURNACE REPAIR

Skilled furnace repairmen everywhere like Tharco Asbestos Furnace Cement because it works easily and because they have found that under the toughest service conditions Tharco lasts longer and gives more satisfactory results.

THARCO
Asbestos Furnace Cement
 THE ARMSTRONG COMPANY
140 SOUTH PONTIAC AVENUE DETROIT 17 4040 SOUTH LA SALLE STREET CHICAGO 9 316 SOUTH CRAWFORD STREET DALLAS 1
 PRODUCED BY AN EXCLUSIVE FORMULA FOR
 MORE THAN 30 YEARS



Grey Market on Sheets

Some months ago when Chicago jobbers met with the board of directors of the Sheet Metal Contractors Nat'l Ass'n, the jobbers pointed out that one important factor in the grey market for sheets was the "under-the-table" scheming going on between scrap dealers and sheet producers.

Confirmation of that statement has been mounting monthly so that, now, it is common knowledge that many scrap dealers are forcing mills to swap sheets for scrap, then, the scrap dealers are selling the sheets for two and three times the legitimate price. Also, some legitimate mill buyers are using the same technique offering mills scrap for sheets and then using the sheets for swapping purposes at speculative prices.

Federal Trade Commission is said to be investigating the situation and may recommend that the Department of Justice check on recent mill purchases. Our industry can help a little by selling our scrap only to scrap dealers who sell scrap legitimately to the mills. As scrap goes, so goes the grey market, may be a truism.

Economic Planning Often Misfires

One of the sources for fats for use in soap making is babassu nuts, picked by natives of South America along the Amazon.

Suffering a fat shortage, soap manufacturers decided to give the natives twice as much pay, hoping they would pick twice as many babassu nuts.

But the natives, with increased pay, decided to work half time, and the result was that the soap makers got just half as many babassu nuts as before.

This sounds like some things that have happened in the United States, where, also, we have a thing called human nature—which the "planners" usually forget.

Heat Pump Textbook

John Wiley & Sons, publishers, have announced the forthcoming publication, probably late in June, of "Heat Pumps" by Philip Sporn, E. R. Ambrose, and Theodore Baumeister.

The new book is believed to be the first full-length volume devoted exclusively to consideration of heat pump design and installation fundamentals, and to applications of the device in building heating and cooling and in industry. The subject is presented by successive consideration of the thermodynamic principles involved; equipment design, specification, and selection; and maintenance, operating, economic, and installation problems. The treatment is reasonably technical, but there is no inclusion of theory beyond that essential for understanding of good installation and assembly. The book will sell for about \$3.75.

ROYAL JET-FLOW out-performs

other heating units costing three times as much

The burner and fire-box are in position and connected to gas lines. Prefabricated parts including registers are ready for quick assembly.



The outer-casing and radiation shield are lifted into place. The riser, register head, vent pipe and condensation box are placed in position.



The pre-cut covering that conceals heating unit is assembled by carpenter. Cold air intake is at bottom and hot air register 6" below ceiling.



Typical view of an installation in Kaiser Community Homes Project

Royal Jet-Flow is easy to sell, easy to install in new homes or homes already built. The Royal creates new markets—added profits. For the Royal gives two-way heating—high velocity circulation plus ceiling radiation. The Royal circulates pure warm air to all parts of the house with a minimum of temperature variation from room-to-room and ceiling-to-floor. Independent laboratory tests, conducted in a five room house, with controlled outside temperature of 30° F, showed a maximum room-to-room temperature differential of 4° at a height of 60 inches. Royal Jet-Flow is available for immediate delivery—write for information and prices.

SPECIAL FEATURES: 1. Easy to adapt into floor plans—allows architect freedom in his design. 2. Simple inexpensive installation—in any type home. 3. High velocity output of 250 feet per minute achieved through use of venturi principle—in effect forced air without blower or fan. 4. Installed above floor—simplifies heating problems in concrete slab construction. 5. Heats entire house of average size with a minimum of temperature differential from room-to-room and ceiling-to-floor. 6. Fire-box constructed of low alloy high tensile steel for greater resistance to deterioration. 7. Corrugated fire-box of even thickness—designed to eliminate noise caused by expansion and contraction. 8. Engineered for safe operation—scientifically vented, both burner and pilot valve equipped with safety lock. 9. Hot air outlet out of reach of children. 10. Attractive registers fit inconspicuously into any style of decoration. 11. Carries American Gas Association Seal of Approval—guaranteed. 12. Thoroughly tested—over 3000 installed and in use.

Send today for charts giving ideal home heating temperatures, and results of tests conducted on forced air, space, wall, floor, and Jet-Flow heating units under identical circumstances by independent laboratory.

1024 WESTMINSTER AVENUE, ALHAMBRA, CALIF., DEPT. A-5

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PAT. APPLIED FOR.



Your problems are important to him



Your Armco Distributor is doing his best to serve you well. He knows how badly you need Armco special-purpose sheets—that you probably have unfinished jobs waiting for them. But he's doing everything he can to help.

Right now he can't deliver all the Armco sheets you can use. That's because the orders he has represent six years of backed-up civilian demand.

Today Armco mills are rolling around the clock to catch up with this demand, producing such preferred grades as ARMCO Galvanized PAINTGRIP Steel, with the mill-Bonderized finish that takes and holds paint . . . bright, rustless ARMCO Stainless Steels . . . and soft, ductile ARMCO Ingot Iron.

You can be sure that your Armco Distributor will do his part in getting them to you at the earliest possible moment. The American Rolling Mill Company, 1311 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

TURN IN YOUR SCRAP— PROTECT YOUR STEEL SOURCE

- Unless steel mills get more scrap at once, everybody must wait longer for steel. You can help. Check your unusable tools, machines and obsolete equipment. Collect all the iron and steel scrap you can find and speed it through regular channels to the mills. The need has never been more critical—not even in wartime.



THE AMERICAN ROLLING MILL COMPANY

• SPECIAL-PURPOSE SHEET STEELS • STAINLESS STEEL SHEETS, STRIP, BARS AND WIRE



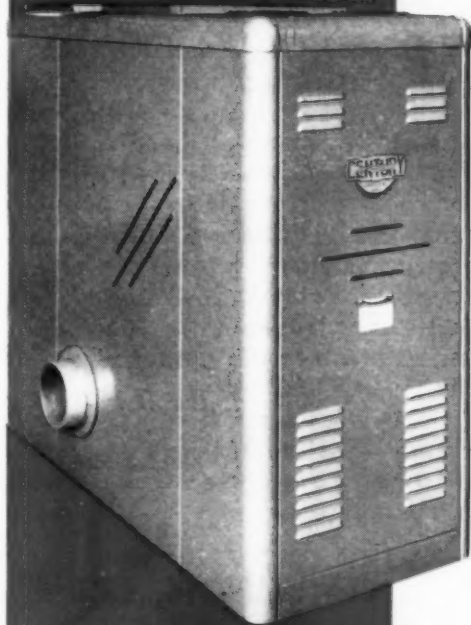
MODEL "L" OIL BURNER

AT CENTURY *Quality Control*

INCLUDES TESTING EVERY NOZZLE

THE thorough check of each nozzle, as shown above, is one of many tests devised to make the finished Century product the very finest available.

Each part, as it goes along the assembly line, is submitted to a rigorous test where accurate instruments catch even the slightest defect. Built with watchlike precision, no burner leaves the factory that fails to pass tests designed to duplicate operating conditions in your home. Neither is any burner shipped that has not been placed in a regular furnace and fire tested, assuring perfect performance right from the start. Inquire about a profitable Century franchise.



MODEL "R" FURNACE UNIT

Domestic water units and boiler burner units have been temporarily discontinued from our line due to material shortages.

CENTURY
Engineering Corporation
CEDAR RAPIDS, IOWA

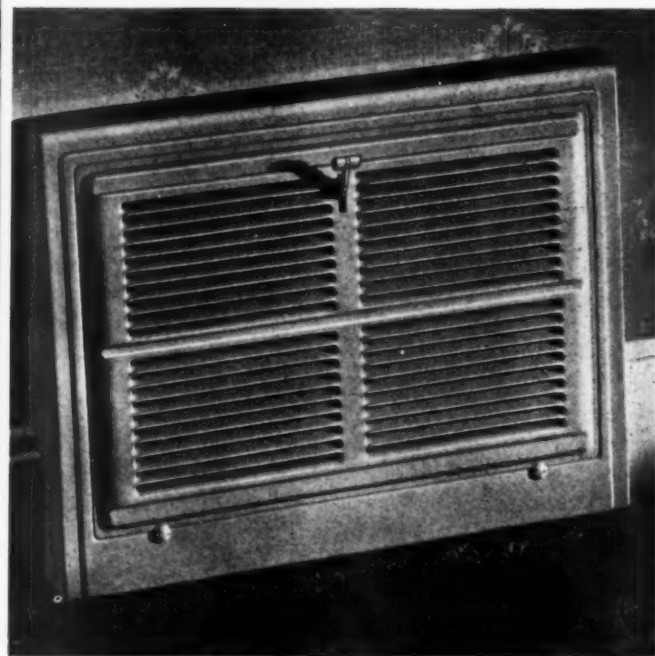
OIL BURNERS
HUMIDIFIERS

BOILER-BURNER UNITS
WATER HEATERS

WARM AIR FURNACES
AIR CONDITIONING

Auer HEAT-RITE

*Outstanding
Among Gravity
Registers*



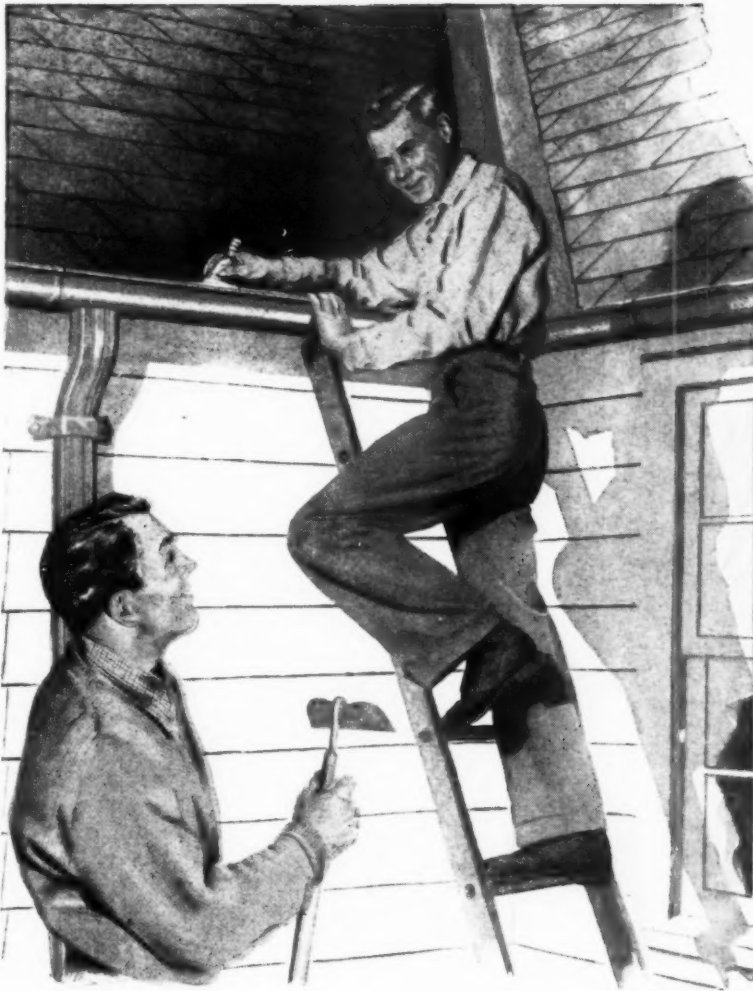
The Heat-Rite has closely spaced fins, giving the streamlined effect of modern air conditioning registers. Other gravity registers, at competing prices, may look like Heat-Rite, but careful examination proves many of them lacking in the workmanlike construction and fine finish that distinguish this Auer quality register. A substantial product, neat and trim in every detail, it makes a tight, well fitted installation that is a credit to any warm air job. A 2-piece design with removable face, it has plenty of open area, with fins adjustable, at time of installation, for directional flow desired. An important feature is its Auer patented spring tension valve adjustment, which really holds the valve. The Heat-Rite is made in proper types for base or wall location, also for intakes.

● Ask for Auer Register Book showing all models for air conditioning and warm air. Special Grille Catalog also sent on request.

This moderate priced register has *class* — it's the hall-mark of a good gravity job, displayed at the only point most people ever see your work — in the living quarters of the home.

THE AUER REGISTER COMPANY, 3608 PAYNE AVE., CLEVELAND 14, OHIO

Auer **REGISTERS**
& GRILLES for AIR CONDITIONING & GRAVITY



**"ALL I EVER NEED TO DO
IS CLEAN THEM OUT...
THEY'RE ANACONDA COPPER"**



Copper tubes, connected with solder type fittings, provide long-lasting economy when used for piping in hot water, steam, vacuum, vapor and radiant systems.

YOU CAN'T BLAME a man for bragging a little about a home that is properly protected against weather ... and rust.

And, of the many places where copper and its alloys can save money through faithful service year-in-and-year-out, no part of your house is more important than the roof. Here, chimney and valley flashings, gutters and downspouts of Anaconda Copper provide the utmost security against time and the elements. As a result, lower upkeep means that dependable copper costs even less than rustable metal in the end!

It is wise to discuss your plans with a sheet metal contractor, *now*. With advance notice, he will be more likely to obtain Anaconda Sheet Copper—your assurance of high quality metal. Write also for the booklet, "How to Protect Your Home Against Rust."

4700

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A co
by the

This color advertisement reaches millions of present and prospective home owners in their favorite magazines. It is typical of the Anaconda advertisements designed to help you in your business.

These ads follow the theme, *rustproof your home with copper*. They also suggest giving you time to obtain the materials to do the best job possible.

4700



Anaconda
COPPER and BRASS

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

wide variety
the home
for the
The
with

**Engineered for
equal efficiency
with OIL or GAS
— converts to
either fuel
at low cost**



**Here's the answer to restrictions caused
by fuel-shortages in your community:**

The Mueller Climatrol 201 CONVERTIBLE Furnace

Here is timely proof that, with the complete, versatile Climatrol line, you can always take advantage of the "breaks." If it's a gas-shortage in your community, you can sell an oil furnace to people who want gas and can't get it — converting with a gas burner when the shortage is over. If it's a fuel-oil shortage, reverse the process!

And *all the time* you will be delivering *automatic*

heat. Your customer will be getting the efficiency of an *oil-designed* job while he burns oil — and the efficiency of an AGA-approved *gas-designed* job when he burns gas (or LP-Gas.)



The Mueller Climatrol 202 Winter Air Conditioner consists of the 201 Gravity Furnace (shown at the top of the page) plus a blower package. Like the 201, the Winter Air Conditioner converts from oil to gas at low cost without loss of efficiency. Being a reversible unit, the blower package may be arranged on right- or left-hand side.

The Mueller Climatrol CONVERTIBLE Furnace is the answer to your inventory problem too!

With various combinations of these 4 standard packages —

- | | |
|----------------------------|----------------------------|
| A — The Heater Package | C — The Gas Burner Package |
| B — The Oil Burner Package | D — The Blower Package |

you can install: (1) an oil-fired gravity furnace — AB; (2) a gas-fired gravity furnace — AC; (3) an oil-fired winter air conditioner — ABD; (4) a gas-fired winter air conditioner — ACD. You can work with a minimum inventory, varying your stock of (B) and (C) according to changing demand.

It's easy to see why the Climatrol dealer, with the advantage of Mueller flexibility, is always on top. Sell Climatrol for every job — it pays!

Write for bulletins.

L. J. Mueller Furnace Co.

2010 W. Oklahoma Ave. Milwaukee 4, Wis.



MUELLER
Climatrol

Reg. U. S. Pat. Off.

D-82

**Beth-Cu-Loy Sheets last
2 to 2½ times
as long**



Ordinary air ducts made from Beth-Cu-Loy Galvanized Sheets can be expected to last twice as long as those made from plain galvanized steel sheets—or ever longer.

The principal reason for this added service is the resistance to rust provided by Beth-Cu-Loy's copper-bearing steel base. It is manufactured from open-hearth steel that contains 0.20 to 0.30 pct copper. In atmospheric-exposure tests by the American Society for Testing Materials this composition has proved itself more than twice as corrosion-resistant as ordi-

nary steel. Further rust-protection is given to Beth-Cu-Loy Sheets by the brightly spangled, uniform coating of Prime Western zinc.

Aside from their lasting qualities, Beth-Cu-Loy Sheets are easy to form, to seam and to solder. They make fast work of difficult jobs. Their slight additional cost is more than balanced by their longer life and other advantages.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation*

Beth-Cu-Loy Galvanized Sheets



CRESCENT

TRADEMARK OF A

Master Craftsman



* "CRESCENT" is our trade mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.



**CHRYSLER
AIRTEMP**

**DIVISION OF
CHRYSLER CORPORATION**

**FINE HOME HEATING, AIR CONDITIONING
AND COMMERCIAL REFRIGERATION PRODUCTS**

It's the Name Behind a Product that Counts

AROUND the world the name Chrysler stands for great engineering skill and manufacturing excellence. This reputation gives products of Chrysler Corporation wide public acceptance. It also gives dealers in these products prestige, and a standing in their communities.

Such prestige and good will are the fundamentals of enduring business success. You immediately attain these when you raise the Chrysler Airtemp sign over your place of business. The automatic home heating, air conditioning and commercial refrigeration products of this Division of Chrysler Corporation are

known for high quality, dependability and low cost made possible by the most advanced mass production methods.

The Chrysler Airtemp Triple Line of products was created to give dealers profit opportunities every month in the year. However, dealer agreements are also written for one, or two lines of products to fit the requirements of specialty organizations.

We invite inquiries concerning Chrysler Airtemp dealer agreements, and for your convenience have placed a coupon in this advertisement. Mail it now.

AIRTEMP DIVISION OF CHRYSLER CORPORATION, DAYTON 1, OHIO
In Canada—Therm-O-Rite Products, Ltd., Toronto

Automatically Yours



For Details—Mail Today

Airtemp Division of Chrysler Corporation
Dayton 1, Ohio
Please provide me with information concerning Chrysler Airtemp dealer agreements. AA-1

Name
Business
Address
City State
I am interested in Heating ☐
Cooling ☐ Refrigeration ☐

HEATING • AIR CONDITIONING • COMMERCIAL REFRIGERATION

WATER HEATING BY OIL IS **POPULAR-**

IDEAL for satisfaction
and economy when
controlled by

"DETROIT"

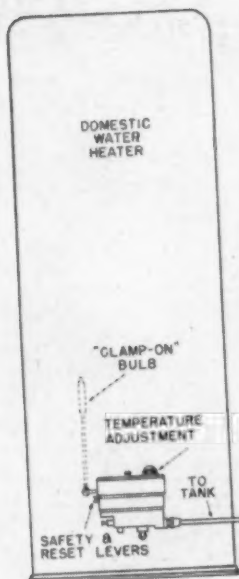
CRC-239-W FLOAT VALVE



Experience of thousands of users testifies to the ideal satisfaction and economy of the oil fired water heater controlled by the "Detroit" CRC-239-W Float Valve. Ample supplies of hot water are available at all times at low cost.

"Detroit" Float Valves automatically compensate for fuel flow variations due to oil temperature changes—may be adjusted for use of different grades of fuel.

The power element automatically regulates the burner to keep water hot. It is of "fail safe" type—in case of damaged element, the burner goes to low fire. An easily operated adjustment enables the user to regulate water temperature.



- "Detroit" valves are simple, have few parts, are easy to clean and service.
- Water heaters equipped with them are an excellent sales proposition.

2672

DETROIT LUBRICATOR COMPANY

General Offices: 5900 TRUMBULL AVENUE
DETROIT 8, MICHIGAN

Division of **AMERICAN RADIATOR & Standard Sanitary CORPORATION**
Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG



"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

AMERICAN ARTISAN, June, 1947

USE

Sal-Mo Asbestos #77 DUCTBOARD

the Quick, Easy Way to Make Cold Air Return Ducts

AN asbestos product developed and manufactured for the construction of ducts in warm air heating and ventilating systems. It is made to do the same job that is also done with metal.

FIRE PROOF

SAL-MO No. 77 Ductboard is made of solid asbestos throughout. Positive protection against fire.

MOISTURE PROOF

Scientific treatment to prevent moisture absorption. It can be used any place where high relative humidity prevails.

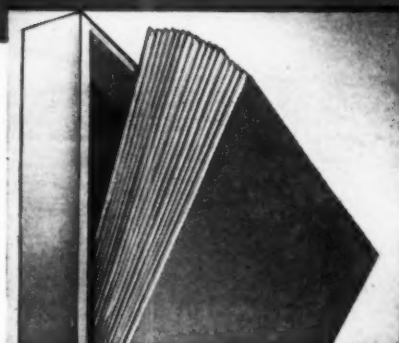
EASILY HANDLED

SAL-MO No. 77 Ductboard is a time saver. Sheets are 33" x 48", the exact size for covering two joist openings spaced at 16" centers. This makes two cold air return ducts. It is easily cut with saw, knife or snips and is applied with hammer and wallboard tacks or with a stapler. It is easily fabricated into square or rectangular ducts.

ATTRACTIVE IN APPEARANCE

Its attractive gray finish may be painted or plastered after installation.

*See Your Jobber—He Can Supply You
with SAL-MO No. 77 Asbestos Ductboard*



Smooth finished, rigid . . . Sal-Mo No. 77 Ductboard is light in weight and durable. Packed in convenient cartons.



Sheets are 33"x48"—exact size to cover two joist openings at 16" centers.

(Below)—Applying No. 77 Sal-Mo Ductboard to make two cold air return ducts.



SALL MOUNTAIN COMPANY

176 W. ADAMS ST. • Phone ANB. 2414 • CHICAGO 3, ILLINOIS

Features— NEW! DISTINCTIVE! ADVANCED!

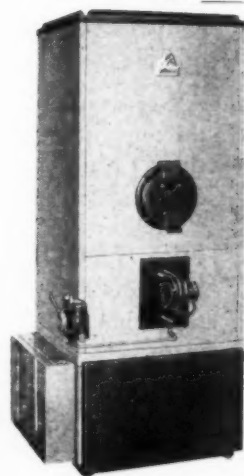
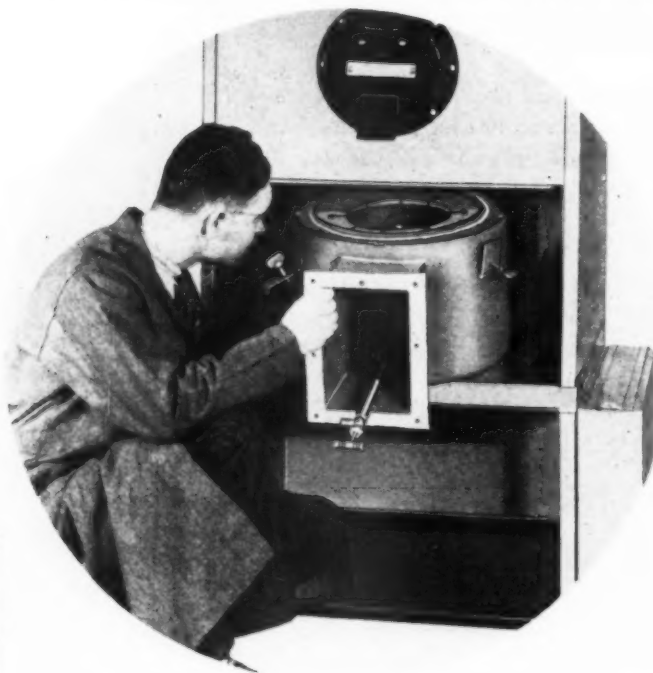
IN *Luxaire* 1947 OIL FIRED UNITS



Series VG
Oil Fired, Steel
Gravity Unit



Series VA
Oil Fired, Steel
Air Conditioning Unit



Series VH
Oil Fired, Steel Utility
Air Conditioning Unit

Removing the complete burner assembly on Luxaire vaporizing pot type units is a matter of only a few minutes. Take out 8 screws, remove a single panel, loosen 2 wing nuts and the complete burner can be lifted out bodily—it's that simple.

In designing Luxaire's 1947 vaporizing pot type oil fired units, Luxaire engineers had a threefold purpose—oil burning equipment which is easy to install, easy to service and easy to own.

The advanced, distinctive features of this 1947 Luxaire line meet this goal and give you the heating equipment by which you can cash in on the tremendous demand for "oil-heat."

THE C·A·OLSEN MANUFACTURING COMPANY

Luxaire



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO


Char-Gale FEATHER-LIGHT-ALUMINUM FITTINGS

A NEW PRODUCT IN STEP WITH MODERN TRENDS

... and it costs no more!

Char-Gale all-aluminum fittings come pre-finished. Their surface needs no paint. Rust-resistant, they stay new. Install them today, and for years to come your work will speak well of you.

A furnace is only as good as its installation. Char-Gale fittings give furnaces a high degree of efficiency.



Char-Gale fittings are easier to install. Aluminum lightness means lower freight costs, quicker assembly time, more jobs finished with less

effort. And they don't cost any more than fittings of other materials.

Come over to the modern side; ask your jobber about Char-Gale aluminum fittings.

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

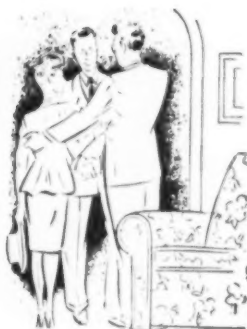
CHAR-GALE

MINNEAPOLIS, MINNESOTA

CHAR-GALE MFG. CO.

OMAHA, NEBRASKA

GREET THE PROSPECT WITH CONFIDENCE.....



With Petro you're selling more than just a fine oil burner

When you recommend Petro to your oil burner prospect, you can assure him with confidence that a Petro will live up to *all* his expectations.

Do not hesitate to invite him to investigate Petro — both the *burner* and the *burner-maker*. Encourage him to go as far as he desires. For the more thorough his examination, the more clearly he will see why a Petro can be relied on for low-cost heating performance for many years.

Petro oil burners are the product of experienced engineers, trained craftsmen, modern manufacturing facilities and all the resources of the world's oldest and largest organization devoted exclusively to oil heating.

Petro oil burners are obtainable in pressure-atomizing models handling from 1 to 18 gallons per hour of domestic fuel oil. Also in rotary cup models handling from 11 to 145 gallons per hour of heavy commercial-industrial oils. This equipment is distributed through established heating wholesalers. The name of the nearest supply house will be supplied upon request.

PETRO

REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903

PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

Petro Refineries in: CORPUS CHRISTI AND PORT ISABEL, TEXAS. Fuel Oil Bulk Plants and Distribution Terminals in: BOSTON • PROVIDENCE
STAMFORD • MT. VERNON • NEW YORK • MINEOLA • BROOKLYN • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

The *tireless twins* provide clean, *effortless* heating



Homemakers appreciate the superior advantages of automatic heating operated by Twin Contact Controls, symbolized by the *Tireless Twins*. For, it offers them new hours of freedom from cleaning drudgery — more time for rest and play.

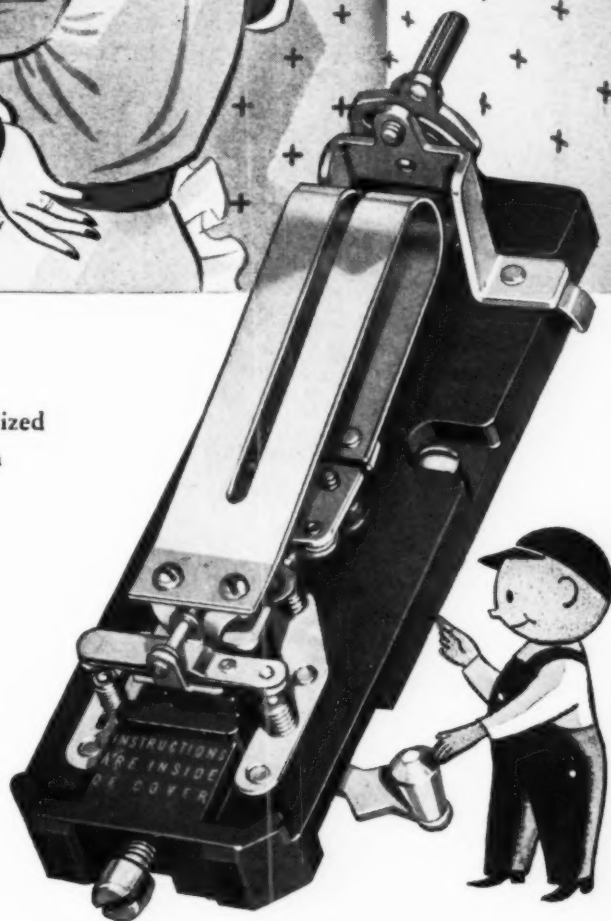
Automatic heating is the only modern home equipment that provides complete freedom from physical effort . . . keeping homes neater . . . air fresher and healthier. Gone is the dust, dirt and grime resulting from overheated or smoky heating systems.

Wherever the finest automatic heating systems are sold, you'll find them equipped with Twin Contact Controls bearing the manufacturer's trade mark name.

PERFEX CORPORATION, MILWAUKEE 7, WIS. • Perfex Controls Ltd., Toronto 1, Ont.

PERFEX
TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES
OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES



MAGIC DIAL THERMOSTAT OUTSTANDING FEATURES

- ★ Positive snap-action Twin Contacts avoid false starts.
- ★ The Magic Dial adjustment varies length of firing periods.
- ★ Heat from "interval timer" applied to bimetal by conduction assures uniform, short firing periods.



YOUR MARKET IS BIGGER

... and it's growing faster!

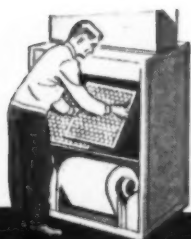
The demand for modern warm-air heat is increasing constantly. The reason is simple—millions of satisfied, *enthusiastic* users.

Your most direct profits from this increase will come, of course, from the satisfied users in your community. So, make sure that they are satisfied! And enthusiastic! See that their modern warm-air systems continue to operate at top efficiency—that each one is properly adjusted and has *clean filters*, dependable DUST-STOP Filters.

You'll find that helping users get all the heating advantages they've paid for, will pay you profits two ways: in more and easier sales (of heating units and installations) tomorrow; in extra revenue and profits (from your service business) today.

Contact your DUST-STOP Distributor and let him show you how you can build up a worthwhile service business. Free promotion materials will soon be available. Owens-Corning Fiberglas Corporation, Toledo 1, Ohio.

In Canada: Fiberglas Canada Ltd., Toronto, Ontario.



DUST STOP AIR FILTERS

T.M. REG. U.S. PAT. OFF.

... a FIBERGLAS product

"Your partner whose Actions speak louder than words"

VICTOR

THE FURNACE WITH PATENTED HEAT RADIATING **FINS**



*Square, Enameled
Casings Available*

NOW!

The quality, satisfaction and fast selling advantages of the complete VICTOR furnace line make money quickly for Victor dealers. Since 1890 Victor Furnaces have been recognized as standard for the best in engineering, sturdy construction, beauty and permanent heating satisfaction. Hall-Neal maintains an engineering department which is at the service of every dealer for every type of heating job whether for Oil, Gas or Coal installations. The Victor line will take you "out" of the competitive class. Write us—we are now accepting new accounts. Your inquiry will be promptly and fully answered.

FURNACES • OIL BURNERS • STOKERS • GAS FURNACES • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1322 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

Whether you're in a hurry — or have lots of time —

call us for **Steel**

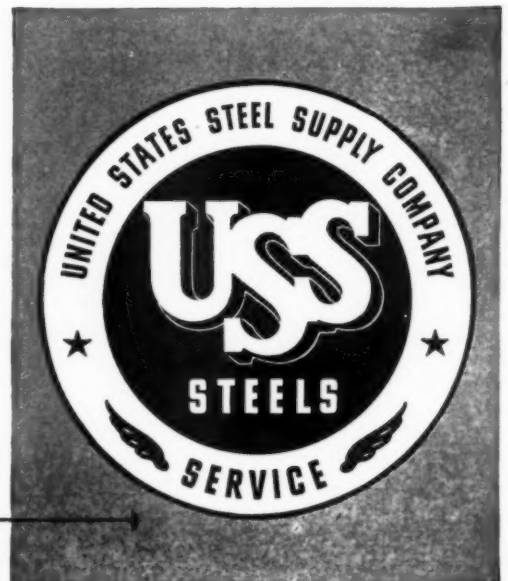


WE hope you aren't always in a "jam" when you call us for steel. But when you are, we will give you the fastest possible service. And for anticipated needs, you can depend upon us to give your orders exacting attention.

Whether you need a pound or a ton of steel—whether you require Stainless, High Strength or Alloy Steels... Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Machinery, etc.—call, wire or write our warehouse nearest you for prompt, dependable service.

Symbol of Service

FOR STEEL USERS



UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1319 Wabansia Ave., P. O. Box MM	BRUnswick 2000	NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479	Bigelow 3-5920
BALTIMORE (3)	Bush & Wicomico Sts., P. O. Box 2036	Gilmor 3100			REctor 2-6560, BERgen 3-1614
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42	STAdium 9400	PITTSBURGH (12)	1281 Reedsdale Street, N. S.	CEdar 7780
CLEVELAND (14)	1394 East 39th St.	HEnderson 5750	ST. LOUIS (3)	21st & Gratiot Sts., P. O. Box 27	MAin 5235
MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045	MIltchell 7500	TWIN CITY	2545 University Ave., St. Paul (4), Minn.	NEstor 7311

UNITED STATES STEEL

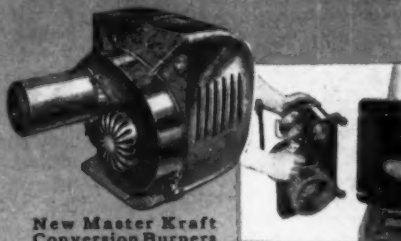


BY POPULAR DEMAND . . .

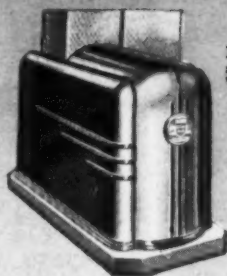
If you sell oil heat—you know that a long list of satisfied customers is your sure way to expand. That is just what has happened to us—and to our dealers from coast to coast. Each Master Kraft installation makes a pleased customer—a booster. This means growth for the factory and prosperity for our dealers . . . a perfectly natural result of the steadfast policy we have followed for 25 years—of building quality products and *helping dealers sell*. The factory addition shown above is being built NOW—to meet the demand for the new, modern Master Kraft line.

DO YOU KNOW full details of this sensational new line—with quick-change service units . . . and handsome, efficient PACKAGED boiler and hot air units? Mail the coupon for full details. You can *profit* by joining this fast moving, live wire Harvey-Whipple organization.

NEW FACTORY SPACE BEING ADDED for manufacture of this NEW LINE



New Master Kraft Conversion Burners have patented features—quick removable service units, as shown at right.



New beautiful packaged Master Kraft Warm Air Conditioners.



New amazingly compact Master Kraft Sun-Blaze Boiler Units.

HARVEY-WHIPPLE, INC.

Master Kraft

REG. U.S. PAT. OFF.

OIL HEAT

Harvey-Whipple, Inc.
Dept. AA-6
Springfield, Mass.

Gentlemen:
Please send me details about a Master Kraft Franchise.

Name
Street
City State

Field is Honored

by the recognition given by these manufacturers of The Finest in heating products.
They and others use Field, The Best in barometric draft controls.

ANCHOR STOVE & RANGE DIVISION
STRATTON & TERSTEGGE CO., INC.
LOUISVILLE, KENTUCKY

A. O. SMITH CORPORATION
MILWAUKEE, WISCONSIN

ARMSTRONG FURNACE CO.
COLUMBUS, OHIO

AVERY FARM MACHINERY CO.
PEORIA, ILLINOIS

BROWN STOVE WORKS, INC.
CLEVELAND, TENNESSEE

CHARTER OAK STOVE & RANGE CO.
ST. LOUIS, MISSOURI

CLEVELAND STEEL PRODUCTS CORP.
CLEVELAND, OHIO

COLE HOT BLAST MFG. CO.
CHICAGO, ILLINOIS

COLONIAL BEACON OIL COMPANY
NEW YORK, NEW YORK

COMBUSTIONEER DIVISION, STEEL
PRODUCTS ENGINEERING CO.
SPRINGFIELD, OHIO

CRANE COMPANY
CHICAGO, ILLINOIS

DOWAGIAC STEEL FURNACE CO.
DOWAGIAC, MICHIGAN

EAGLE STOVE WORKS
ROME, GEORGIA

ESTATE HEATROLA DIVISION
NOMA ELECTRIC CORPORATION
HAMILTON, OHIO

EVANS PRODUCTS COMPANY
PLYMOUTH, MICHIGAN

THE FARQUHAR FURNACE CO.
WILMINGTON, OHIO

FLAME MANUFACTURING CO.
MINNEAPOLIS, MINNESOTA

FLORENCE STOVE COMPANY
GARDNER, MASSACHUSETTS

FURBLO COMPANY
HERMANSVILLE, MICHIGAN

GENERAL BRONZE CORPORATION
LONG ISLAND CITY, NEW YORK

GLENWOOD RANGE COMPANY
TAUNTON, MASSACHUSETTS

GOULD OIL BURNER SALES CO.
EAST BOSTON, MASSACHUSETTS

GREEN COLONIAL FURNACE CO.
DES MOINES, IOWA

GROSSENBACHER FURNACE CO.,
INC.
ST. LOUIS, MISSOURI

HALL-NEAL FURNACE CO.
INDIANAPOLIS, INDIANA

H. A. HOWELL OIL BURNER CO.
DIXON, ILLINOIS

H. C. LITTLE BURNER CO.
SAN RAFAEL, CALIFORNIA

HEATCRAFT COMPANY
LOUISVILLE, KENTUCKY

HOLCOMB & HOKE MFG. CO., INC.
INDIANAPOLIS, INDIANA

HOLLAND FURNACE COMPANY
HOLLAND, MICHIGAN

INDEPENDENT OIL BURNER CORP.
JAMAICA, NEW YORK

INTERNATIONAL OIL BURNER CO.
ST. LOUIS, MISSOURI

KALAMAZOO STOVE
& FURNACE CO.
KALAMAZOO, MICHIGAN

KING STOVE & RANGE COMPANY
SHEFFIELD, ALABAMA

KOL-GAS HEATER COMPANY
NASHVILLE, TENNESSEE

KRESKY MFG. CO., INC.
PETALUMA, CALIFORNIA

LENNOX FURNACE CO.
MARSHALLTOWN, IOWA

LINK-BELT COMPANY
CHICAGO, ILLINOIS

LOCHINVAR PRODUCTS DIVISION
MICHIGAN TANK & FURNACE
CORP.

DEARBORN, MICHIGAN

LOCKE STOVE COMPANY
KANSAS CITY, MISSOURI

LYNN PRODUCTS CO., INC.
LYNN, MASSACHUSETTS

THE MAJESTIC COMPANY
HUNTINGTON, INDIANA

MALLEABLE IRON RANGE CO.
BEAVER DAM, WISCONSIN

MASCOT STOVE COMPANY
CHATTANOOGA, TENNESSEE

MEYER FURNACE COMPANY
PEORIA, ILLINOIS

MONTAG STOVE & FURNACE
WORKS
PORTLAND, OREGON

THE MOORE DIVISION
CONLON-MOORE CORPORATION
JOLIET, ILLINOIS

MUNCIE GEAR WORKS, INC.
MUNCIE, INDIANA

NORGE DIVISION
BORG-WARNER CORP.
DETROIT, MICHIGAN

OHIO STOVE COMPANY
PORTSMOUTH, OHIO

PHILLIPS & BUTTORFF MFG. CO.
NASHVILLE, TENNESSEE

POCAHONTAS FUEL CO., INC.
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CLEVELAND, OHIO

PREMIER FURNACE COMPANY
DOWAGIAC, MICHIGAN

THE QUINCY STOVE MFG. CO.
QUINCY, ILLINOIS

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TIMKEN DETROIT AXLE CO.

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THE WATERMAN-WATERBURY CO.
MINNEAPOLIS, MINNESOTA

WISCONSIN OIL BURNER CO.
MADISON, WISCONSIN



The "Best for the Finest"

Field Draft Controls—"The Best for The Finest" coal, oil,
and gas fired Furnaces and Boilers; Winter air-
conditioners; Space heaters; Stoves; Ranges; Water heaters.

The National
Warm Air Heating
and Air Conditioning
Association
recommends a good
barometric draft
control.

FIELD CONTROL DIVISION
H. D. CONKEY & COMPANY • MENDOTA, ILLINOIS

Northwestern



EVERYBODY points at us!



No, it's not exactly polite to point, but don't get the idea we're complaining. It's just additional proof that our reputation for supplying the finest in repair parts in the fastest manner possible is still "tops" in the field. It shows that furnace men throughout the nation haven't forgotten that Northwestern came through for them by extending every effort during the critical shortages to fill even the smallest orders.

Shortages are pretty well in the past now . . . we have an ample supply of parts on hand to fill any order and you're still sure of the same fast, reliable service. Just as soon as you're able to put out the fires and tear down the heating plants you'll find plenty of business in replacing firepots, grates, collars, pipe, elbows, etc., . . . and you'll be able to get 'em all in a hurry from Northwestern.

Better start laying the groundwork now . . . get out among your customers and line up the work so you'll be able to operate to the best advantage. The heating season was unusually long this year which means you'll have just that much less time to cover all your prospects and get the maximum repair work to assure a profitable season.

If you haven't done business with us before, a trial order will convince you that Northwestern service saves you time, trouble and money. You'll also see why we say "everybody points at us," they *know* from experience that we won't let them down. Drop up a line today for more information.

NORTHWESTERN

662 WEST ROOSEVELT ROAD

STOVE REPAIR COMPANY

CHICAGO, ILL.

There's Gold in them Old Homes



Do a little prospecting among the older homes in your territory. You'll dig up plenty of gold in the way of new business. Sell 'em modern **UTILITY** heating plants, evaporative air coolers, and ventilating systems... Here's a mine of profits that never runs out.

Let us send you complete information and prices on the complete line of **UTILITY** heating and cooling appliances.



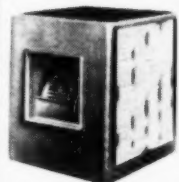
FORCED AIR FURNACES



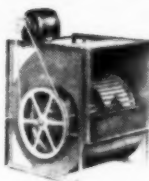
FLOOR FURNACES



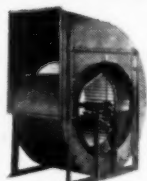
PROPELLER FANS



AIR COOLERS



STANDARD BLOWERS



HEAVY DUTY BLOWERS

UTILITY APPLIANCE CORP.

4851 South Alameda Street, Los Angeles 11, California



DIVISIONS

**GAFFERS & SATTLER
OCCIDENTAL STOVE CO.**

WEIRTON

COLD-ROLLED SHEETS



SOUND FOUNDATION OR SOUND VALUES

For those values that are more than skin-deep—the values that underlie the exterior finish of a manufactured product—there can be no better foundation than Weirton cold-rolled low-carbon steel. Because of uniformly good quality and finish, Weirton sheets are highly esteemed by manufacturers who seek to attain sound value in their products.

WEIRTON STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities
Division of NATIONAL STEEL CORP. Executive Offices, Pittsburgh, Pa.



"Put 'em in and forget 'em."

The Best Buy in Damper Controls"



THE P-K DIAL REGULATOR

HERE are some of the reasons why so many heating contractors call the P-K Dial Regulator "the best buy in damper controls" . . . (1) The unique frame prevents air leakage, promoting efficient operation of the system; (2) Eccentricity of hole in frame with opening in lever binds the bearing and prevents damper rattles; (3) Lever rotates on frame hub, assuring free and easy operation of regulator; (4) Wing nut locks damper in desired position, yet permits quick re-adjustment; (5) Locking nut with key furnished for tamper-proof installation.



Specify P-K Dial Regulators on your next job. They're a cinch to install—on round or flat surfaces. See why you can "put 'em in and forget 'em". Your nearby P-K distributor will be glad to take care of your order. For folder describing complete P-K line of Damper Controls—write Parker-Kalon Corp., 200 Varick Street, New York 14, N. Y.



JIFFY REGULATOR

... one of the simplest of all damper regulators—developed to meet a demand for a low-cost device for domestic air conditioning and furnace installations.

UNXLD

... a quadrant type of damper control made of heavy gauge steel or brass with lever of malleable iron or cast brass. Recognized as the "standard" for manually operated damper controls.



PARKER-KALON

P-K

DAMPER CONTROLS

TYPES FOR EVERY JOB

Rybolt STEEL GAS FURNACES

*Competitively Priced
for Today's Market*

Now in production, Rybolt announces two new steel gas-fired furnaces—SERIES RG 51 Gravity and SERIES RG 52 Forced Air.

Being lower priced than cast iron units, these two steel models offer the dealer an unusual opportunity to meet competition on sale of gas furnaces for new homes or for replacement, where gas companies permit installation of gas-fired units.

Like the Rybolt cast iron units these new series are attractive in design and finish, unusually compact to conserve space and are furnished in a range of sizes to meet the requirements of homes large or small, old or modern. The heavy gauge steel heating elements provide rapid heat transfer which facilitates economy of fuel consumption.

RYBOLT SERIES RG 51 and RG 52 have been approved by the American Gas Association for use with natural, mixed, manufactured or liquefied petroleum gas.



RYBOLT SERIES RG 52 steel gas-fired winter air conditioner is noted for its universal application for basement or first floor utility room. Compact, efficient and economical. Made in three sizes: 70,000 BTU, 105,000 BTU and 140,000 BTU per hour input ratings. For larger capacities two single units may be combined.

RYBOLT SERIES RG 51, steel gas-fired gravity furnace is unusually compact, simple to operate and economical in fuel consumption. Made in three sizes: 60,000 BTU, 90,000 BTU and 120,000 BTU per hour.



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

THE OUTSTANDING EAVES TROUGH IMPROVEMENT

of all Time!



BERGER
REG. U. S. PAT. OFF.
SNAPTITE
EAVES TROUGH

**SO EASY TO ERECT...
SAVES TIME...
SAVES MONEY, TOO!**



With Berger SNAPTITE Eaves Trough, erection is just as easy and simple as the sketches at the left indicate. You slip two joints together . . . snap the bead edges into place . . . pinch the bead edges together, and solder if desired. No tacking is necessary. And the result is a strong, rigid installation that lasts.

Another important feature: Accurate measurement is unnecessary with SNAPTITE. Because it slips together, it can be lapped as much as needed. No slip joint trough is required.

See your local distributor about SNAPTITE Eaves Trough—also Berger Conductor Pipe and Accessories, Roofing of all types, and Metal Lath. Berger is playing no favorites in distributing its products.

**BERGER MANUFACTURING DIVISION
REPUBLIC STEEL CORPORATION**
CANTON 5, OHIO

Warehouses in Boston, Philadelphia and St. Louis



No other control system offers all these outstanding advantages...



- SELF-OPERATED, NO OUTSIDE CURRENT REQUIRED
- SIMPLIFIED TWO-WIRE CONTROL
- ACCURATE ROOM TEMPERATURE CONTROL
- INTEGRAL SAFETY CONTROL
- SILENT OPERATION

A completely self-contained and self-operating control system. For natural, manufactured or L. P. gases. For all kinds of domestic, commercial or industrial applications. System consists of the B-60 pilot operated diaphragm type gas valve, the T-80 Series Trimtherm Thermostat, which is scientifically correct in design, and the

ingenious pilot generator which produces the operating current, safety control, and main burner ignition. The B-60 Series of controls has set new standards throughout the gas industry. • For complete specifications on the GENERAL CONTROLS line of Automatic, Pressure, Temperature and Flow Controls, see the new 1946 Catalog 52C. • For Gas Heating Controls, request Service and Instruction Manuals.

GENERAL CONTROLS

501 ELLIOTT AVENUE

GLENNDALE, CALIF.

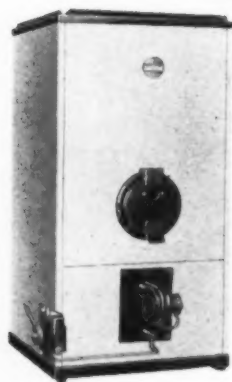
Manufacturers of Automatic, Pressure, Temperature & Flow Controls

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
WINSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

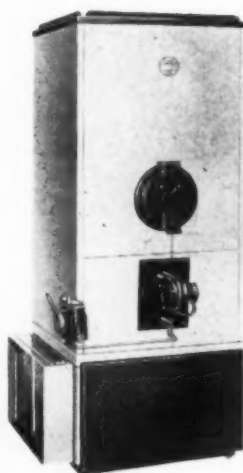
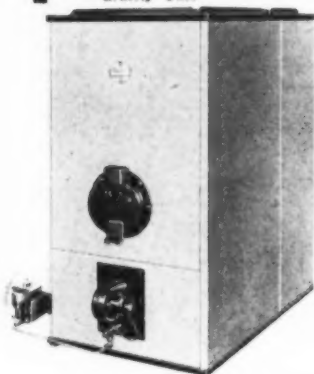
Check These

in MONCRIEF'S *new* Vaporizing Pot Type Oil Fired Units

*Easier to Install
Easier to Service
Easier to Sell*



Series VW
Oil Fired, Steel
Gravity Unit



Series VU
Oil Fired, Steel
Utility
Air Conditioning Unit

Series VL
Oil Fired, Steel
Air Conditioning Unit



It's just a matter of a few minutes to install or to remove the burner in a Moncrief 1947 Oil Fired Unit, without dismantling heating element or cabinet.

And it's just a matter of a few minutes to remove or install the complete heating element without disturbing plenum chamber or pipes, top or sides of cabinet.

Add to these features a radically new innova-

tion in burner design that provides maximum utilization of the oil burned and a minimum of carbon deposits.

Check these and you have a few of the features of the outstanding line of vaporizing pot type units of 1947.

THE HENRY FURNACE COMPANY • Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

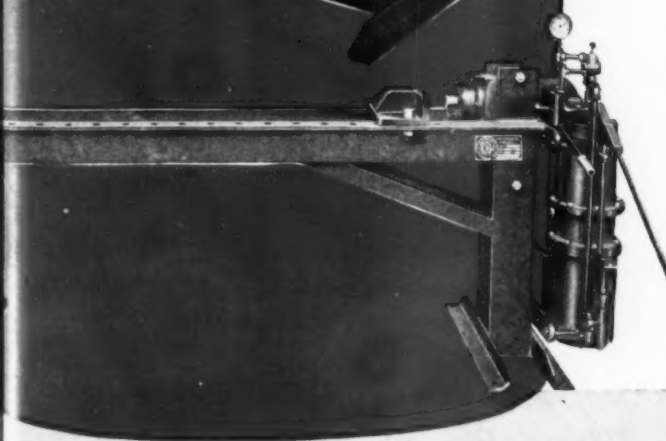
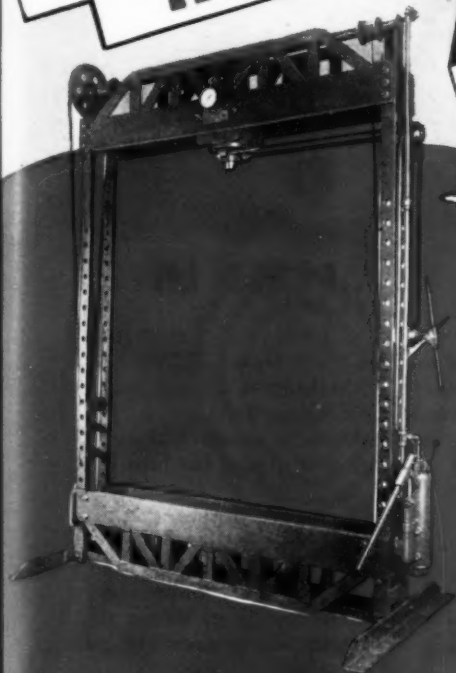
MONCRIEF
SINCE 1893

FURNACE PIPE AND FITTINGS

HIGH...

WIDE...

OR HORIZONTAL



**KRW BUILDS HYDRAULIC
ARBOR PRESSES TO DO
YOUR JOB BETTER...
DELIVERS THEM FASTER
...SELLS FOR LESS**

● While KRW builds a standard line of Hydraulic Arbor Presses, a very large percentage of our production consists of special adaptations such as are illustrated here. These special presses generally cost little more than the standard presses because of KRW mass production methods and the fact that, outside of larger frames, they are built almost entirely of standard components. Any KRW press can be either hand-operated, air-operated or motor-driven, in capacities from 25 to 75-tons. If you are faced with a production problem that might be solved with any type of hydraulic press, you can save time and money by telling us your needs. Our hydraulic press engineers will work out a practical solution...without obligation...of course. Mail the coupon.

K. R. WILSON, 215-217 Main Street, Buffalo 3, N. Y.

Please mail me a copy of your 36
Hydraulic Arbor Press Catalog.

Name.....

Address.....

City & Zone..... State.....

K. R. WILSON
215 MAIN ST., BUFFALO 3, N. Y.

Complete Coverage SPELLS Greater Profits \$ \$ \$ \$

GET IN ON MORE OF THE HEATING BUSINESS
BY HANDLING A COMPLETE LINE

THE J & C LINE*	
MODEL	BTU (l. BONNET)
G2-70	52,500
OL3-85	85,000
G5-130	104,000
AL590	106,000
MF15	120,000
CO150	150,000
CO195	195,000
MF30	240,000
MF48	350,000
MF63	500,000
MF1000	800,000
CC2500	2,000,000
CC4000	3,800,000

*Above are representative models in the J & C line that includes more than 100 types and sizes.

With well over 100 types and models . . . from 52,500 to 3,800,000 Btu's per hour at bonnet . . . Jackson & Church has the most complete line in the warm air heating field.

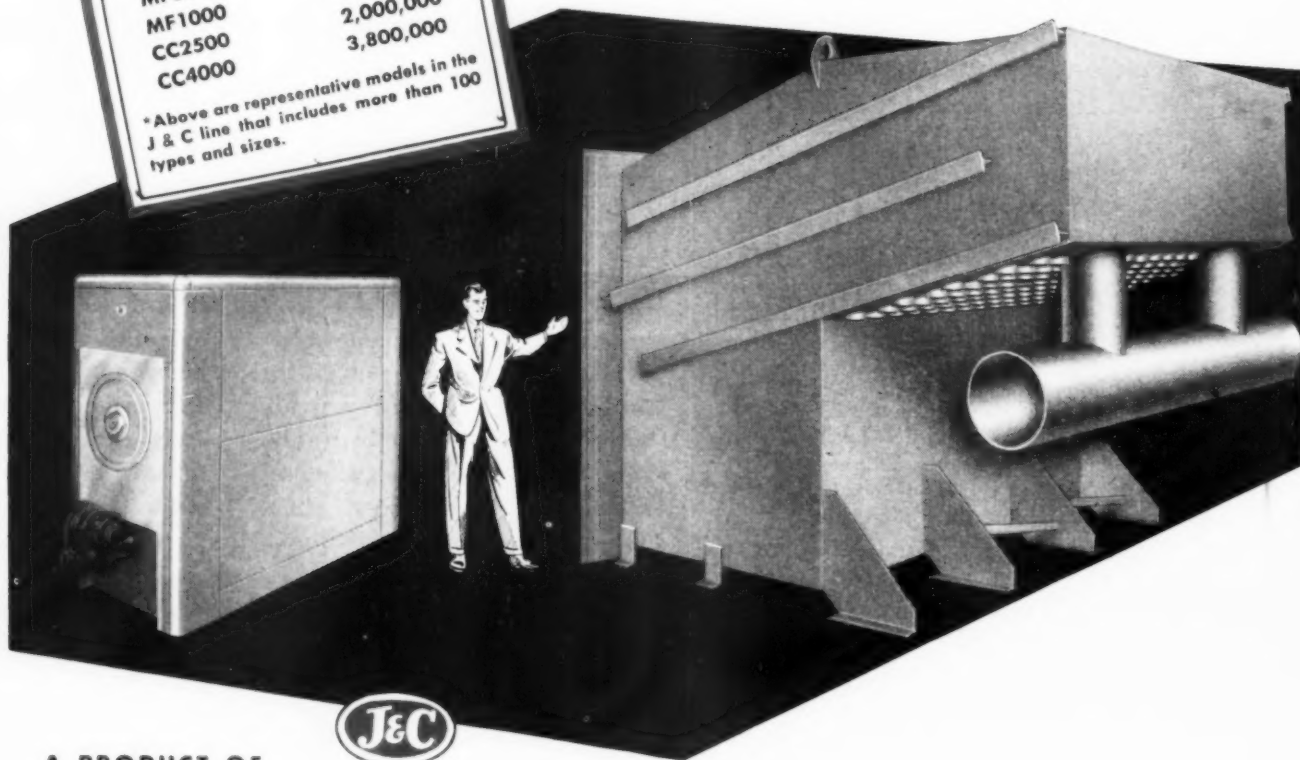
Whether your customer's heating problem is residential . . . commercial . . . or industrial . . . you have a model for him if you handle J & C heating equipment.

Units are available for coal, oil or gas firing . . . either gravity or forced air . . . and mechanical or hand fired.

The J & C Winter Air Conditioners and the J & C "PoweRated" Heaters are adaptable to Panelaire heating or any approved type of installation. The "PoweRated" Heater is in demand where heating requirements are greater and where processing presents a problem.

When you have determined the volumetric requirements of your building at the proper temperature rise . . . you'll find a J & C model to satisfy your need.

Go J & C and have . . . the whole story . . . in front of you at all times. Contact your nearest J & C jobber or write us here at Saginaw.



A PRODUCT OF

JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN

WORK WELL DONE SINCE '81



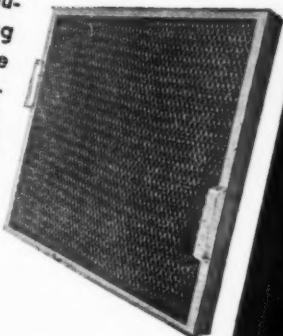
THE AGITAIR EFFICIENCY FILE

for

AIR CONDITIONING & VENTILATING SYSTEMS

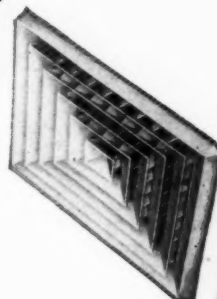
FILTERS

High Velocity Agitair Air Filters, with exclusive Turbulent Cleansing Action, filter 50% more air with greater efficiency at the high velocity of 432 F.P.M. In all types and sizes for air conditioning, ventilating, and industrial applications.



DIFFUSERS

Agitair Air Diffusers with Diffusion Pattern Control permit 100% control of air distribution—with no drafts, no blank corners, no hot spots, no cold spots. Available in attractive, highly efficient styles, both rectangular and circular, to fit any installation.



EXHAUSTERS

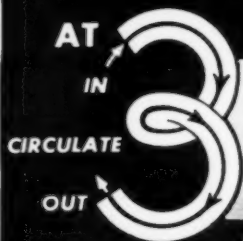
Wind Actuated Agitair Exhausters exhaust up to 50% more air at average wind velocity . . . will not retard natural ventilation even with no breeze. Ideal for both gravity and mechanical air exhaust systems.



You'll find a spot for Agitair in every heating, ventilating and air conditioning installation. Choose Agitair products with the complete assurance of service, quality, and dependability.

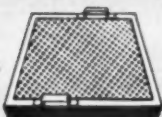
Contact the friendly Agitair representative in your vicinity for help with your heating and conditioned-air problems.

Send for Data on Complete Line



KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST

1
FILTERS



2
DIFFUSERS



3
EXHAUSTERS

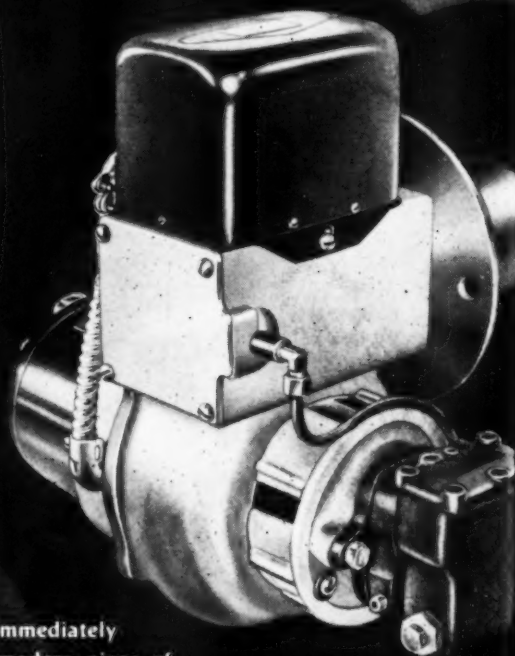
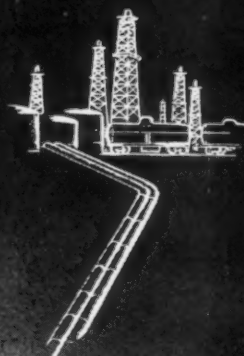
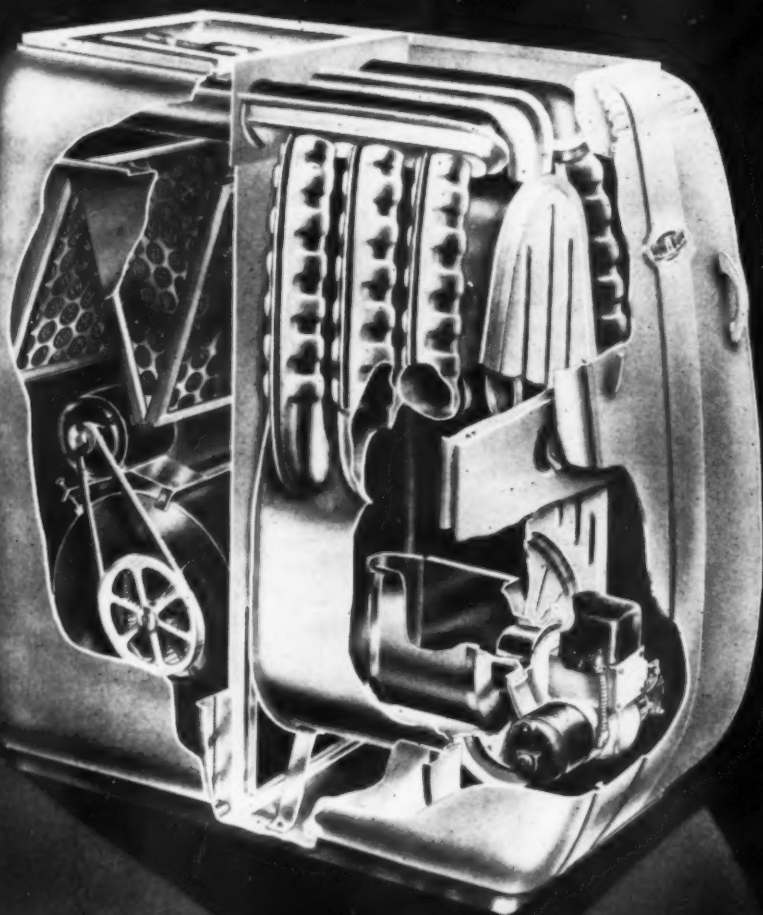


and also
DIRECT-FIRED
HOT GAS
GENERATING
FURNACES
etc.



AIR DEVICES, INC. • 17 EAST 42nd STREET • NEW YORK 17, N. Y.

MADE FOR EACH OTHER
and both are made for your customers!



"THE SUN NEVER SETS
 WITH MOR-SUN"

In looking at the MOR-SUN furnace, you are immediately aware of the fact that here, at last, is a modern piece of equipment--integrally designed as a complete unit.

Remove that beautiful die-pressed casing, and you will find a rugged heat exchanger of heavy gauge pressed steel--every part die-stamped into shapes that give maximum heating surface without resorting to tortuous flue passages, dirt-collecting radiators, or pulsation-inducing baffles.

The MOR-SUN heat exchanger is absurdly simple in design--the heat produced by the long-life MOR-SUN atomizing type oil burner travels upward and outward, heating all surfaces of the unit--a unit welded into one piece from stem to stern with no joints or gaskets.

So you have beauty on the outside and rugged efficiency on the inside. But the MOR-SUN gives you even more--dependability--through use of quality control equipment. It gives you economy of operation proven by laboratory and field tests. It gives you economy of first cost--due to modern mass production methods.

It gives you--and your customer--supreme value!

MORRISON STEEL PRODUCTS, Inc. BUFFALO 7, N. Y.

Buildings that LAST



Plasteel Roofing and Siding Installation
on building at Port of Tacoma, Washington

Roofing and Siding — your building "cover" — is the deciding factor over the years on —

1. How long your original building lasts—
2. How much it costs you for periodical painting and maintenance—
3. How often you have to make costly repairs and replacements.

That is why in choosing your building "cover" you should choose one that insures permanency—that you can apply and forget—not one that requires periodical expense of painting, maintenance and replacements.

STEEL

Weather-Tested
PLASTIC

EXTERIOR
MICA COAT

1. **STEEL**—For strength—durability—light weight—and small bulk.

2. **PLASTICS**—For air-tight protection against rust and corrosion.

3. **MICA**—Finish coat for "weather" protection and pleasing appearance.

PLASTEEL

the modern Roofing and Siding is steel permanently protected (all over) by a specially developed plastics coating. It resists corrosive atmospheres—rust—salt spray—weather—heat and cold. Never needs painting—lasts indefinitely—and gives your building a pleasing appearance. Choose permanency—choose PLASTEEL.

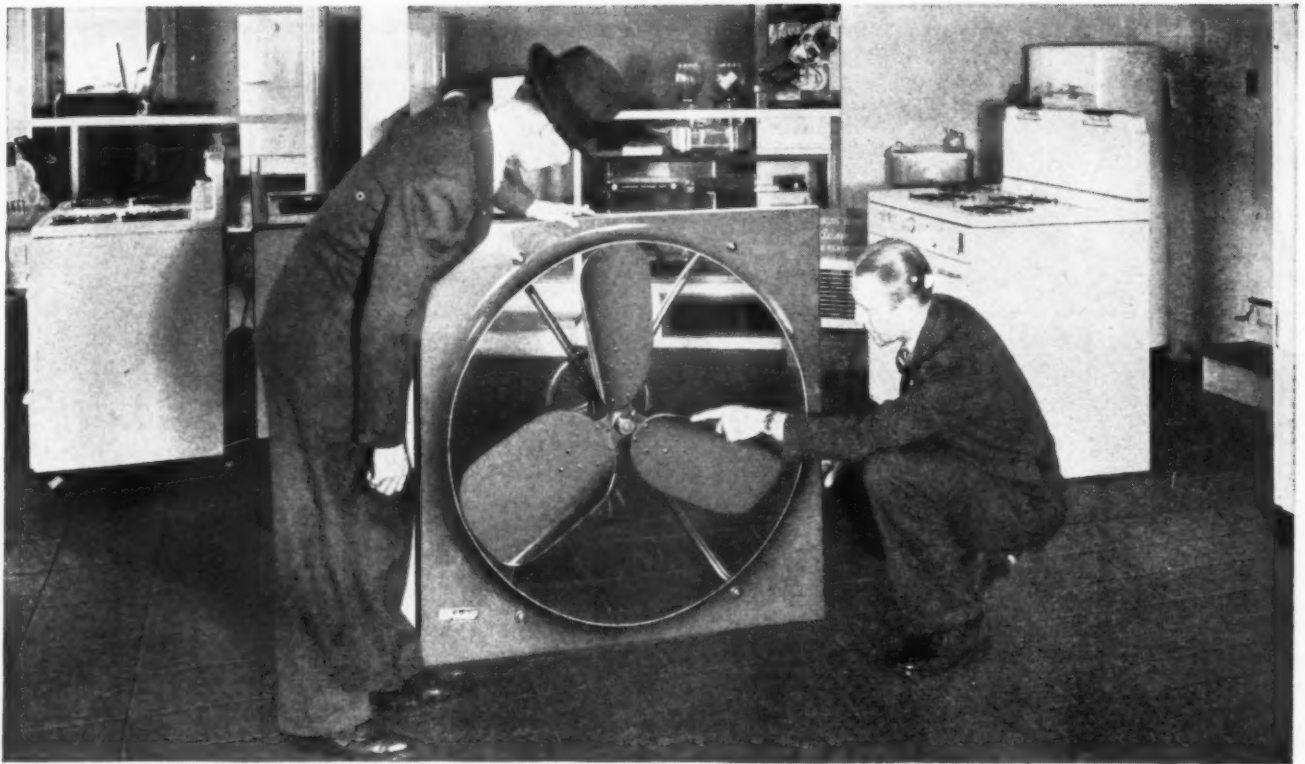
Write or Wire for Complete Information Today.
A Few Choice Territories Still Available
for Representation.



PLASTEEL PRODUCTS CO.

General Office and Plant

Washington, Pennsylvania



Highly Successful Louisville Contractor Gives You the "Low Down" on His Sales Success with LAU "Niteair" Fans

Karl J. Daubert, President of the Daubert Electric Company, gives five meaty reasons to which he attributes his outstanding sales and profits success on LAU "Niteair" Exhaust (or Attic) Fans:

1. **STOCK ON HAND.** A large and complete stock for immediate delivery.
2. **TRAINED CARPENTER CREWS.** Trained and experienced carpenter crews operating from trailers equipped with all necessary materials to do a complete installation job (except electrical work).
3. **ELECTRICAL CREWS.** Specialized electrical crews to follow up the installation men and complete the electrical phase of the installation.
4. **ABILITY TO ANALYZE JOBS.** The experience and ability to quickly analyze tough situations in order to give the customer an exact idea of what is to be done and what it will cost.
5. **REFERENCES.** A complete users list so that wherever you are in the city you can point to one of your installations in the immediate neighborhood.

• Fans available for immediate shipment. Jobbers located in every principal city in the country. Find out more about the profit opportunities for you in this readily salable, comfort producing, customer satisfying product.

Write for full information, specifications, prices.

Check THESE LAU FAN FEATURES

All parts — blades, pillow-blocks, pulleys (everything except belt and motor) — are LAU precision manufactured on latest type machines in the modern, greatly expanded LAU factory.

Mass produced for both precision and low cost.

Fan is three-blade type with broad, deep-pitched blades providing greatest suction and air movement, producing maximum air volume with reduced power consumption and air turbulence.

Venturi-type entrance housing "streamlines" air flow. Eliminates most common cause of "air noise."

LAU Self-Aligning Pillow Blocks with Durex Porous Metal Bearings hold fan shaft rigidly, avoiding vibration.

Entire assembly statically balanced.

Five sizes — with discharge capacity for practically every requirement.

Light weight. Reduced shipping charges.

THE **LAU** BLOWER COMPANY
Dayton 7, Ohio, U. S. A.



Director of Heating Comfort—*YOU!*

● Probably you have never thought of yourself as a director of heating comfort. *But you are!* The home owner can depend on you for a shrewd diagnosis of his heating troubles. Whether it is a new system to be installed or repairs on an old one, he can be sure that you know the short cuts to economy and efficiency.

For heating experts like you know their job. You are painstaking and exacting. You insist on automatic controls that are efficient and dependable . . . controls that are built to give long satisfaction.

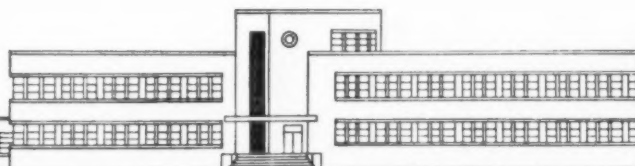
PENN Automatic Controls meet your demands.

That's why so many of you heating men like to see them on the equipment you install. That's why you use them to replace worn-out parts.

HEATING DEALERS! CONTRACTORS!
Get full information on PENN'S dependable and efficient controls today. They're a smart way to bigger profits . . . to secure better satisfied customers. Write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th St., New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ontario.



PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



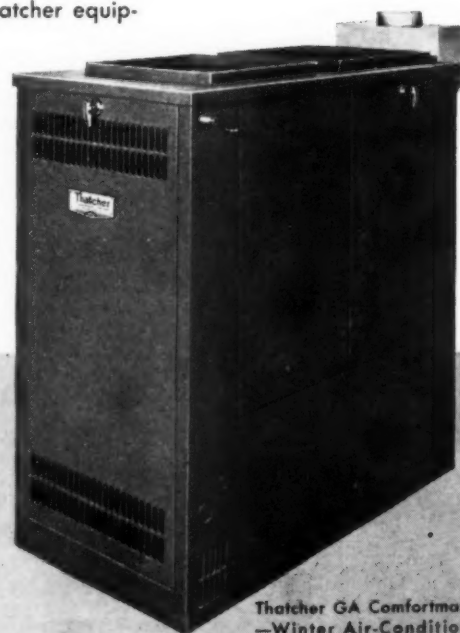
206 out of 207 GROSS-MORTON HOMES heated by THATCHER

Triangle Sheet Metal Works installed these 206 Thatcher Comfortmasters for Gross-Morton. Thatcher's high score is no accident. Many leading heating contractors choose Thatcher for the quality heating it insures home owners. These contractors know the economy, the service-free operation that's characterized Thatcher equipment for 97 years.

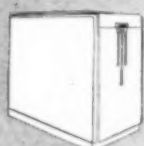
For INCREASED PROFITS Work With Thatcher

Thatcher's know-how can change a tough job into a smooth profitable operation. Put Thatcher and the Thatcher name to work right now. For anything in the line of residential heating equipment—recommend yourself by recommending Thatcher—your warm friend since 1850.

BERNARD ZWERLING . . . Triangle Sheet Metal Works installed these 206 Comfortmasters. He says, "...we couldn't have asked for any more help, any greater co-operation than Thatcher gave us on this job."



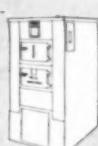
Thatcher GA Comfortmaster—Winter Air-Conditioner



Oil Fired Comfortmaster Air Conditioner



Series A Oilmaster Boiler



Triple-Fire All-Purpose Boiler



Thermaster Gravity Furnace



Thatcher

FURNACE COMPANY
Garwood, New Jersey

SPECIALISTS IN HEATING SINCE 1850

Longer Life Quiet, Dependable Operation

CAST IRON SPHERICAL BALL

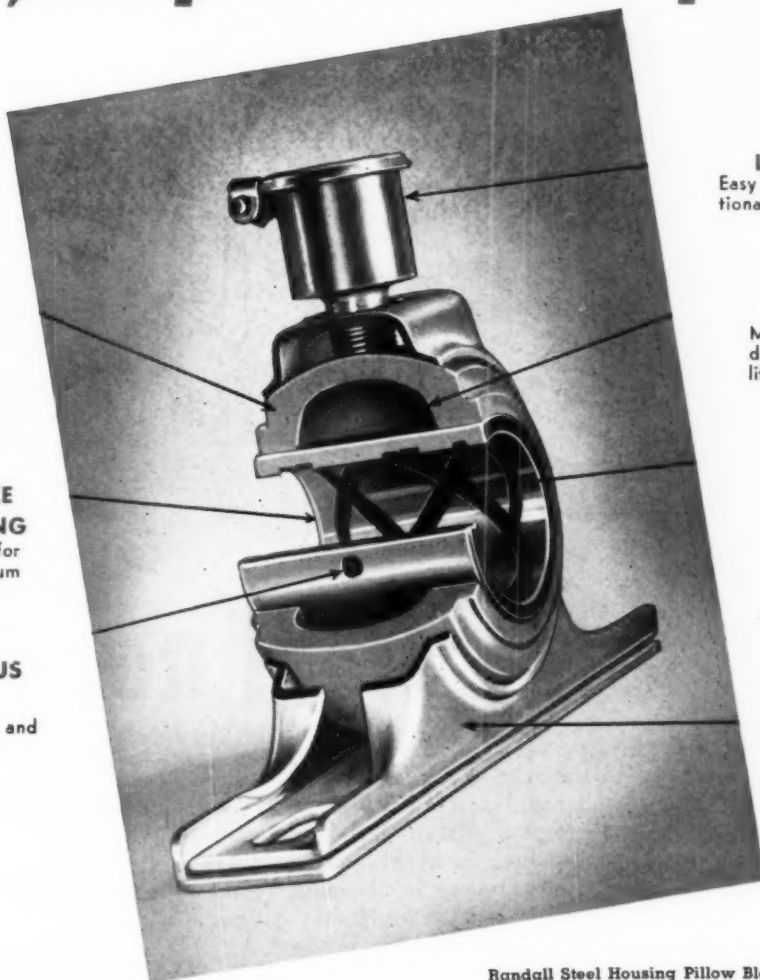
Sturdy, permanent—accurately machined to fit housing. Tapped for pipe connections.

PHOSPHOR-BRONZE SAND-CAST BEARING

Accurately machined for smoothness and maximum bearing area.

GRAPHITE POROUS FEED PLUG

Controls oil flow to shaft and bearing.



LARGE STEEL OIL CUP

Easy to replenish oil—provides additional oil capacity.

LARGE OIL RESERVOIR

Maximum oil storage space for dependable lubrication and long life.

GRAPHITE-OIL LUBRICATION

Graphite (imbedded in grooves in bearing surface) *plus* oil reduces wear and prolongs bearing life.

ONE-PIECE

STEEL HOUSING

Provides continuous alignment. No adjustments. No welded or loose parts.

No Other Pillow Block Has All 7 Features!

Compare these features with any other pillow block and you'll quickly see why Randall is the outstanding favorite for all air handling equipment installations. Self-lubricating and self-aligning, Randall Pillow Blocks are easy to install (no adjustments required), and low in cost.

Get full details. Write for Catalog 47.

Randall Steel Housing Pillow Block with single oil reservoir. Can also be furnished with double oil reservoir. Flange, Universal and Standard types are available with cast iron housings.

Randall

GRAPHITE PRODUCTS CORPORATION
609 WEST LAKE ST., DEPT. 611, CHICAGO 6, ILLINOIS

Representatives Carrying Stocks:

C. W. Marwedel
San Francisco

Tek Bearing Co.
177 Lafayette Ave., New York 13
510 Cambridge St., Boston 34
924 Lafayette St., Bridgeport, Conn.

Salt Lake Hardware Co.
Salt Lake City, Utah

Ed. D. Maltby Co.
1718 Flower St.
Los Angeles 15



The Steel Rush of '47

Back in 1849, the cry of "Gold" sent a horde of men racing westward. Yes, there was gold in California—but not enough for all who hungered for it. Latecomers in the rush found themselves with worthless claims. Others found nothing at all.

Today the cry is for steel. After six long years of war, strikes and stoppages, an equipment-hungry nation is creating history's greatest demand for steel products.

Every day by mail, telephone and telegraph—a steady stream of orders pours into each of twelve great Ryerson plants. And, though steel production is now far above the pre-war level, the tremendous demand sometimes depletes our stocks. Often we are unable to ship many items on your order.

But, unlike the gold supply that faded before the eyes of the hapless Forty-niners, the supply of steel is

being constantly replenished. Products out of stock today may be available the next time you check the nearby Ryerson plant.

And here at Ryerson trained personnel and the facilities of a complete Steel-Service system combine in a concentrated effort to deliver your steel requirements promptly. When the steel you need is not immediately available, we gladly assist you in the search for a practical alternate.

Today, during history's greatest steel rush, this guarantee of full cooperation and service is especially valuable. That's why so many steel users contact Ryerson for all requirements.

Joseph T. Ryerson & Son, Inc. Plants:
New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles.

RYERSON STEEL

AMERICAN ARTISAN

RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

Potpourri

IN THE last few months there have arisen a number of situations which require consideration by owners of warm air heating and sheet metal shops—at the moment time is still available for action, but now is none too soon to begin thinking about these problems in terms of—"what shall I do about them?"

Fuel Oil

Since gas was cut off as a heating fuel, there has developed a phenomenal expansion in oil burner sales. The only factor which has served as a brake on an otherwise run-away sales activity is the continued (but decreasing) scarcity of conversion burners.

Come next winter, we now are told, there are many indications that some users of oil burners are not going to get as much fuel oil as they want or need. Fuel oil distributors are starting to furnish their old customers with gallonage applications—the distributors say their old customers will be taken care of, but thousands of new oil users won't get enough oil.

One version of the situation goes like this—the oil producers will produce all the fuel oil they can store in their own tanks and in the tanks of their distributors, but when these facilities are full the fuel oil will be further refined to gasoline. There will not be the excess of fuel oil which, formerly, provided gallonage for the brokers and opportunists. Therefore, these opportunists will find themselves without oil and go out of business. With the established distributors working to capacity on old customers, and with the opportunists out of business—new oil burner owners face a ticklish situation.

Grey Steel Market

At this time, a congressional committee and the FTC are conducting hearings on the so-called "grey steel market." What will be done, no one knows. About the only tangible fact so far disclosed is that the grey market is thriving on the scrap shortage. Scrap dealers are forcing mills to swap sheets for scrap, then selling these sheets at two or three times the legitimate price. And some legitimate mill buyers are using the same tactics, they buy scrap and swap scrap for sheets which they do not need or use, but can trade. It is also de-

veloping that much of the speculation in sheets is nothing more than an outright racket with speculators accepting money without having any idea of ever delivering sheets.

Warm Air Furnaces

Reluctantly some furnace manufacturers are being forced to curtail operations because of high labor costs, materials and parts scarcities and other aggravations. Labor costs have especially hit the cast iron furnace manufacturers where the foundrymen's unions seem to be determined to force wage rates up regardless of what such rates do to the manufacturer's competitive position. The situation can lead to at least two developments—an increasing ratio of steel furnaces; a bettering of the position of the efficient producer.

Stocks of gas furnaces are said to be alarming in some areas, with manufacturers, jobbers and dealers holding gas furnaces which they cannot sell. American Artisan is compiling a study of the gas situation: incomplete reports received show more areas *not* taking additional house heating load than *are* taking load, but not as much of a difference as was anticipated. Also important, most of the companies not taking additional load report it will be 1948 or 1949 before their facilities will be enlarged. Of interest—about half the areas taking new load are offering low Btu content manufactured gas; the other half offering a high Btu natural or mixed gas are mostly in the southwest.

New Shops

From all parts of the country reports say new shops are opening every day—the total must be in the hundreds—each of these new shops takes some portion of work. So long as there is more work waiting than the industry can take care of, this situation will get little attention, but should there come a time when everyone wants the \$1,000 to \$5,000 job these new small shops with low overhead will become a factor to be reckoned with. Since these new shops, generally, are opened by the best and most aggressive mechanics, the drain on our already short supply of qualified mechanics is no small problem.

(Continued on Page 126)

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Arnold Kruckman's Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



Plenty of Steel—At \$240 a Ton!

MONTHS ago a friend, who is a national figure in a steel-using industry, said that he knew the shortage in steel, and the fantastic prices demanded for the commodity were due to the operation of the grey market by insiders in the steel industry. Everybody talked about the grey market around these parts, but no one did anything about it—until the other day, when Senator Edward Martin's Steel Subcommittee of the Senate Small Business Committee brought the subject spang out into the open at a hearing late in May. The Subcommittee also includes Senators Harry P. Cain, Washington; Irving M. Ives, New York; Allen J. Ellender, Louisiana; and Spessard L. Holland, Florida. The names are especially given in this Letter because these men have courage. They are locking horns with one of the biggest combinations in the economy of the country. It remains to be seen if the combination will stand back of the "insiders" who, apparently, have been operating not unlike Capone and similar gentlemen who operated in Chicago and elsewhere with liquor and less savory commodities. The Subcommittee came right out in meeting and told the world that its four days of special hearings had evoked "a chain of evidence regarding shipments of steel on the 'grey market' at exorbitant prices; undercover offerings involving thousands of tons of steel; and diversions of steel allocated for priority use." It was brought out in sworn testimony that the Standard-Dickerson Corporation, which makes refrigeration equipment in Newark, N. J., had purchased two carloads of steel from H. J. Kutz of the St. Louis Boiler and Equipment Company, of St. Louis, at \$240 per ton—three times the mill price. Kutz frankly said he made little profit because he was obliged to split commissions many ways. The real excitement in the hearings arose over the Firth-Sterling Steel Company deal. This organization makes steel at McKeesport, Pa. The transaction was wrapped

up in such a tangle of brokers, including New York gangsters and gunmen, that at this writing the Committee still has not been able to get an absolutely clear picture, particularly since, up to late in May, the Federal police officers had not been able to summon the key man at the center of web.

Furnace Makers' Difficulties

In the earlier hearings the interest focussed especially upon M. J. Kohnstamm, who appeared for the Morrison Steel Products Inc., of Buffalo, described as one of the largest warm-air furnace manufacturers in the United States. Mr. Kohnstamm told the Committee that, despite the fact that warm-air furnaces are among the items on the critical list for veterans' housing, his organization was able to get steel the first quarter only on CPA allocation; and during the second and third quarters, when allocations were voided by CPA and the Housing Expediter, the Company could obtain only small acceptances from its largest suppliers. The Secretary of the Hollow Metal Door and Buck Association testified that after CPA and Housing priorities were cancelled the manufacturers of these products, also on the critical list, never were able to secure more than 50% of the normal allotment of steel unless they went into the open market and paid fantastic prices. The Markel Electric Products Company of Buffalo, which makes kitchen and bathroom equipment heretofore has obtained steel from two suppliers, but now cannot obtain enough steel by normal processes to fill its needs. Henry Kaiser's son testified he had to buy 25% interest in the Portsmouth Steel Co., to lick the grey market, and to get enough steel to make Kaiser-Frazer automobiles. Senator Martin's Committee is quite convinced that the limitation of the production of automobiles to 60% of normal capacity is due almost solely to the conditions within the steel industry. There is every indication that the

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Department of Justice is following the testimony closely, and that the law enforcement agency will act if it determines there are legal violations that may be reached by formal prosecution.

Battle Against Cost Increases

The word here is that steel fabricators in almost all echelons, already hit by the vagaries of price and supply, now are vigorously fighting further raises which stem from wages and other increases. It apparently is not yet clear how the increases will be ultimately absorbed. They tell us here that 10% of basic steel normally is sold to processors and converters. There appears to be some fear here that there will be further necessary price increases by reason of freight boosts, and the increase in coal prices which will follow the raise the miners are expected to get in all parts of the country except in the South. The supply of galvanized sheets, hot rolled sheet, strip, and electrical sheets, is reported to be certain to continue short in supply, which doubtless is no news to your industry. We also are told that substantial deliveries of cold rolled steel have been made with reasonable promptness and at normal prices of \$135 per ton. The Martin Committee is trying to verify these reports. Another report here brings word that alloy steels, particularly stainless steels, are having a marked boom. The backlog now is said to be equal to three or four months' output, the ratio to carbon steel having risen from 7% to 10%. The greater demand is attributed to increased production of autos, locomotives, freight cars, and more use in products for the dairy, food, and chemical industries, as well as in jet planes and for other high temperature uses.

Is "Crisis" Russian?

On the other side of the shield there is the report that the shortage of steel supply has been aggravated by the failure of the Russians to come down to cases in agreeing to a settlement of the future of Germany, which holds up the restoration of the badly needed operation of the German steel industry. The Germans hitherto have made most of the steel for Europe, and the lack of the facilities means that we must supply whatever is needed, in the program for rehabilitation to stop the Russians. In passing, it is appropriate to remark that Babson of Boston, who is not bad at making forecasts, and in diagnosing business and social troubles, says most forcibly that most of the so-called "panic" which apparently is being engineered quite obviously by hidden sources in this country comes from the Russians. Babson quite convincingly points out that there is no real ground for the uproar about recession and depression, and that the turmoil is prompted by the fifth columnists who are working in harmony with others who are doing a similar job in practically every other part of the world. This effort to inspire fear and uncertainty is supposed to be the resistance to the effort we are making to "contain" the Russians. The steel people profess to be certain there will be no shortage on account of any export activity in which they may engage unless it is under the direction of the Government itself. They say they

will not voluntarily engage in export until well into next year. They do say that they will send across the oceans at least four times as much steel in 1948, and thereafter, as has ever gone out of America into foreign parts in any other year of peace. The British, French, Russians, Polish, Mexicans, and other Latin-American countries are expected to take at least 15,000,000 tons annually. This pace is expected to keep up until 1952 or 1953 when steel plants on a very large scale are expected to be operating in Brazil, Australia, Chile, Holland, and Norway. Those who use the metal will be glad to realize that the removal of the 4c per pound duty has stimulated perceptibly the receipt of copper from Chile and other foreign countries.

U. S. Maritime Commission, meanwhile, is working strenuously to increase the supply of scrap iron by releasing over-age vessels. The most recent report indicates that 151 ships have been converted into scrap with an aggregate of 536,786 light weight tonnage. There seems to be some strange reluctance in this Government, however, about letting the old ships go, no matter how useless they are. While the steel industry screams for scrap, travelers, who know the ropes, return from the Pacific and other transoceanic places abroad, and tell of the millions of tons of scrap iron they have seen riding idly and uselessly in various places scattered around the world. There seems no sound reason why this scrap is not brought home and converted into the iron and steel that is so desperately lacking. Congressman Harold C. Hagen, of Minnesota, recently told Congress there is 20,000,000 tons of scrap abroad which we shipped overseas for 10 years before we entered the last World War, plus the enormous tonnage of steel in many forms we sent abroad during the War. Another arresting fact is the statement from a Government source that we have not yet even begun to feel the effect of the drain of steel in the form of shapes and plates which will go into the production of freight cars at the rate of 2,500,000 tons per year. Cars are to be produced at the rate of 10,000 per month. Whether this includes the freight cars we will be compelled to produce for our foreign allies is not yet clear. You may get some idea of what this actually means by the fact that housing, at its peak, has taken only 1,200,000 tons per year. And yet the housing program has virtually throttled all other users of hot rolled steel. These specialized programs also have been found to prompt the mills to abandon markets that are at a distance from the mill, because the distant markets are less profitable to supply. The fabricators who are expected to suffer most readily, under present conditions, are those who expanded abnormally between Pearl Harbor and V-J Day; those that embarked on new lines when they resumed civilian production; and those who are in the pockets of the steel-fabricating network stretching from Milwaukee north along the West shore of Lake Michigan, just as an example. All newcomers to the business since the war ended are expected to have difficulties.

A release from a non-Government agency asserts that dealers now have stocks of various heating equipment on hand for immediate delivery. The statement declares that production of all types of heating equip-

(Continued on Page 134)

Introduction to Manual 9.

With this article Mr. Redrup, chairman of the Installation Code Committee of the National Warm Air Heating and Air Conditioning Association, explains the nature of the new Manual 9, which is now available from the Cleveland office along with its proper work sheets.

THIS new manual, (with three work sheets), now ready for limited distribution, is known as the Classroom Edition. It was printed from typed instructions and tables especially for this year's Short Course, sponsored by the Technical Education Committee at Michigan State College. Since the printing was on rather short notice and the procedure of Manual 9 being tested for the first time, the form of this Edition should not be too critically observed from a typographical standpoint.

We can honestly state that Manual 9 and the work sheets have met our needs so well that it was decided to offer this Classroom Edition to the Warm Air Industry now instead of waiting for the better printed First Edition which will be ready for the 1948 season.

Briefly, this new Manual No. 9 or Revised Technical Code for larger buildings consists of only five short Procedure Sections and eight tables for a total of eleven pages. There are three work sheets known as Form 9A-47 (Heat Loss Sheet), 9B-47 (Warm Air and Return-Air Branch, stack and register sizing sheet) and 9C-47 (Warm-Air and Return-Air Trunk Duct Sizing Sheet). These three are used on each job and should be ordered by Form numbers.

The procedure for determining warm air ducts and registers is described in Section A and starts with the heat loss of each room and a rough layout of the warm air side. The form used is 9B-47 and the instructions given in numbered lines are so simply and easily followed from the Stack No. in the top line to Register Size in the last line that it is practically self-explanatory. There are no correction factors to bother with. A straight line of sound engineering is followed directly to the objectives required.

The same simple, logical procedure is followed in Section B and on the same work sheet 9B-47 for the Return-Air side.

Section C, Procedure for Determining Trunk Sizes for both warm air and return air runs uses Work Sheet 9C-47 and data from Work Sheet No. 9B-47. This work sheet and procedure are as simple and easy to follow as in the preceding sections.

Sections D and E on back cover of Manual 9 give correct procedure for determining necessary size of blower and furnace.

The tables in the Manual which furnish the data needed in various lines on work sheets 9B and 9C were prepared by Prof. Konzo's assistants and grad-

uate students. The industry is indebted to them for a fine piece of work well done.

The equivalent length of fittings is illustrated the same as in Manual 7, except that resistance of warm air registers is handled separately.

Bonnet Temperature

Table A determines usable bonnet temperatures depending on the longest and shortest runs. After this bonnet temperature is determined, the register temperature and cfm/1000 Btu per hr. is found from table for each register, determined by linear distance from furnace. There is a lot of predigested engineering in this table.

Tables B1 and B2 are a new contribution from our Research Staff with a bow of admiration to Dave Levinson in particular. These tables take into consideration the length of throw, deflection used, cfm required, and arrive at the answers in register free area required and the resistance of the register. Air velocities at register face are also indicated.

Table C gives the total friction loss for duct work only. This is determined from the equivalent length of duct in feet and the cfm to be carried in duct.

Table D gives the pressure drop per 100 feet of duct run.

Table E is the latest corrected A. S. H. & V. E. friction pressure chart in tabular form. From the table, the round duct sizes are determined.

Table F gives the rectangular equivalents of the round duct sizes.

Tables G & H for selection of Warm Air Registers and Return Air Intakes are for class room use only. The free air opening for cfm delivery required should be taken from register manufacturers' catalog of the type being used or specified on the particular job being figured.

We recommend the trial and use of Manual No. 9 and accompanying forms. The Installation Codes Committee will appreciate your comments and constructive criticism before the more permanent First Edition is printed. We want to express our sincere appreciation to the members of the Research Staff, Technical Engineering and Installation Codes Committee who have spent so much time and effort the past year in preparing the material for Manual No. 9.

W. D. Redrup,
Chairman, Installation Codes Committee.

NEWS SUMMARY OF THE MONTH

Forty-Hour Week in Chicago

THE Building Construction Employers Association of Chicago is asking individuals building new homes and sponsors of commercial and industrial projects to co-operate with contractors and union officials in limiting employment of the building trades workers to five days a week after June 1.

The association is suggesting that if this 40-hour work week can be carried out effectively in the Chicago area, over-all construction costs may be reduced substantially, despite the fact that by June 1 most building trades workers will have received wage increases of approximately ten per cent (sheet metal workers, \$2.15 per hour).

The association reports that many home builders and sponsors of non-housing construction, in order to have their projects completed quickly, have been pressing contractors for as many workers as can be obtained. The completion of a project, says the association, in many cases is not gauged by having an extra large labor force working overtime, but by the availability of material, and Saturday work for which double time is paid in some crafts usually does not add very much to the progress of a project.

The association reports that the policy was adopted after widespread competition among contractors in some trades had led to the general adoption of a six-day work schedule, pirating and competition for workmen as well as a high ratio of labor turnover by mechanics who sought to work for contractors who would give them the extra overtime Saturday pay.

The Chicago Metropolitan Home Builders Association has already announced that its organization will support the program and believes that elimination of Saturday work will decrease the cost of a new home by approximately eight to nine per cent.

Copper Outlook

AS emphasized by several speakers at this year's state conventions, the most serious of all material shortages is in copper and there seems to be no prospect for early release. The gap between domestic output and demand is now approximately 60,000 tons a month and even if all our domestic mines were producing at top capacity, the deficiency would still be about 40,000 tons per month.

The government has offered a solution in the way of attracting foreign copper by voting to suspend the four cent a pound excise tax on copper import until March 31, 1949. This legislation has been approved by the House and Senate finance committees, but the Senate may finally see fit to either limit the suspension to one year or adopt an amendment which will impose a limit of 400,000 tons on total tax free imports.

As to prices, the domestic price has jumped from

14¾ cents a pound to 21½ cents per pound since de-control and foreign copper, including the tax, is approximately 25 per cent higher. Since the British ministry of supply has just boosted its price to 24.6 cents a pound (3 cents higher than the U. S. market) there is some doubt that our domestic price will attract sufficient foreign copper.

Foreign production of copper has fallen so that the total world output is approximately 1,700,000 tons of which 1,400,000 tons are required by the United States alone.

The Wolcott Bill

STILL pending in Congress is the Wolcott Bill, which as prepared would abolish the office of Housing Expediter, end the ceilings on new homes, and the channeling restrictions on building materials and would terminate the 1,500 sq. ft. maximum limit on new houses. An amendment to the bill may, at the same time, lift the ban on new non-housing construction. The bill retains financing aids allowing vendors to insure mortgages on low-cost homes up to 90 per cent of the value and four per cent interest and give the veteran a short-time preference in the purchase or rent of a new house.

Eighty Thousand Learners

IT IS announced by William F. Patterson, Director, Federal Apprentice Training Service, that AFL building trades unions have stepped up their training program so that today there are nearly 80,000 apprentices learning the construction trades.

Factory Built Homes

DURING the first quarter of 1947, four new guaranteed market contracts for prefabricated homes have been added to the five which had been signed by the end of 1946. The new companies and the number of units authorized are:

The Lustron Corporation, Cicero, Illinois—14,500 units; General Houses, Incorporated, Chicago, Illinois—2,000 units; General Homes, Incorporated, Columbus, Ohio—1,700 units; Fox Metals Corporation, Denver, Colorado—1,550 units.

A total of eleven companies have been given guaranteed market contracts but only Homeola Corporation is actually in substantial production. Approximately 30,000,000 dollars in Reconstruction Finance Corporation loans has been authorized to tempt potential producers of prefabricated homes and four producers of building material. Of this amount, only 350,000 dollars has been disbursed as of April, 1947. The new contracts guaranteeing 19,800 prefabricated dwelling units brings the grand total to 71,200 units authorized since the beginning of the program.

Tools and Machinery

CONTRACTORS who have been patiently waiting for delivery of new machines and tools may be encouraged to know that tool equipment manufacturers recently have announced that many manufacturers are now producing on back orders for comparatively recent months. The postponement of re-tooling by the automobile companies and other large manufacturers may soon make machine tool production available to the sheet metal and machine shop industries.

No report is available showing distinctions between different types of machine tools, but it is stated that the change in the situation is pretty generally applicable to all machine tool producers.

In connection with tools of all types, Washington announces that there will be added to current War Assets Administration inventories a very substantial amount of valuable machinery and equipment because the sale of plants fully equipped is slowing down and the equipment may shortly be taken from these wartime structures and offered piecemeal while the demand is still high. Local newspapers all over the country are currently carrying announcements of WAA offerings.

Recently sheet metal contractors have announced receipt of machine tool equipment ordered many months ago and, even more encouraging reports are of receipts of equipment ordered only a short time ago.

Asphalt and Tar Roofing

SHIPMENTS of asphalt roofing in March, 1947, exceeded shipments in March, 1946, by well over 1,000,000 squares of material. The total quantity of roofing shipped in March, 1947, amounted to 5,754,363 squares—a gain of nine per cent over the month of February.

Shipments of saturated felt in March totalled 28,408 tons compared with 25,482 tons in February, an increase of 11 per cent.

Peak in Construction Cost

FIFTY-THREE per cent of 268 general contractors in all parts of the country, polled by the F. W. Dodge Corporation believe that the peak in construction cost has been reached. In some areas such as New England and the South Atlantic and even South Central States, the opinion was in the ratio of two to one that costs had already attained their highest level. Only in the Pacific Coast area was there an opinion that the peak has not been reached and further increases may be anticipated, ranging from ten to twelve per cent during 1947.

The poll also indicated that prices for most building materials and equipment with the exception of lumber, cement, structural steel, and cast iron soil pipe have been relative stable since January 1.

Forty-three per cent of the general contractors reported that the average wage of some building craftsmen in their respective areas have increased since the first of the year. Seventy-six per cent of the contractors stated they expected increases in building

wage rate within the next few months.

These general contractors reported the following reasons for unusually high costs: (1) labor inefficiency caused by irregular flow of material; (2) delays in construction owing to an inadequate supply of skilled workers; (3) excessive expenditure of time in shopping for and obtaining materials.

The concensus seemed to be that there will be a drop in the current high rate of contract letting before the construction industry obtains a continuous recovery level. The majority anticipate a decrease in present cost levels approximating fourteen per cent.

Steel Production

A COMPREHENSIVE report on the steel industry is nearing completion in the Department of Commerce and is expected to be ready for release shortly.

Among the many interesting items in the report is a part pertaining to current production of cold rolled sheet and strip steel, the backbone of such industries as the automotive or refrigerator or construction industry.

According to the Department of Commerce, current production of cold rolled sheet and strip steel is at a rate of 17,200,000 tons per year. As a result of expansion now in progress in finishing facilities, capacity next year is expected to be about 18,700,000 tons. Demand, says the Department is estimated at 20 to 22,000,000 tons for 1947.

Community Property Taxation

WITH the recent addition of the State of Oregon, there are ten community property states and Hawaii. In community property states, the husband's income and profits may be divided equally between himself and his wife on separate income tax returns. This usually means a lower overall tax if the split-up drops the income of both parties into lower tax brackets.

Congress recently has been deluged with requests for similar community tax regulations in many additional states. If Congress OKs the idea, probably many additional states will adopt this tax measure. In at least seven additional states, community tax bills are already in the legislative hoppers.

Commercial Air Conditioning

POTENTIAL demand for air conditioning, says the Machinery and Metal Section of Department of Commerce, is tremendous, with the largest immediate market being in stores, restaurants and commercial establishments where costs are justified by the advantages provided. Market surveys conducted by the Department of Commerce indicate that retail stores are keenly interested in air conditioning with only about one store in four having even partial air conditioning, but with practically all kinds of stores expressing interest in conditioning in order to attract customers.

(Continued on Page 122)

How To Reduce Payroll Taxes

Under Merit Rating* [Part 7]

Reserve Ratio System

Arizona	Missouri
Arkansas	Nebraska
California	Nevada
Colorado	New Hampshire
District of Columbia	New Jersey
Georgia	New Mexico
Hawaii	North Carolina
Idaho	North Dakota
Indiana	Ohio
Iowa	Oregon
Kansas	South Carolina
Kentucky	Tennessee
Louisiana	West Virginia
Maine	Wisconsin

IN the above states, an employer's rate is determined by the relation between his payroll and the balance in his contribution account.

A "reserve ratio" is determined for each employer by dividing his account balance (all contributions less all benefit charges) by his average annual taxable payroll for the last 3 or 5 years. Included in the computation are those contributions and wages for which reports and contributions were filed by the contribution deadline.

This "reserve ratio" is then applied to the schedule of rates set up by state law, thus determining the merit rate for the given company.

The key to a low rate under the system is *lower benefit charges*. Vigilance over benefit payment is doubly important since each award of benefits affects *all* your future rates. In states where benefit amounts have recently been liberalized, it will be more difficult to reduce the total amount of charges since each individual charge will be greater.

An expanding payroll—whether caused by new hiring, rising wage levels, or more overtime—makes it harder to get a low rate. Conversely, a decreasing payroll acts to lower rates.

Example

Employer X in California is determining his rate for 1947. Rates are figured as of June 30, 1946 (the computation date), and go into effect on January 1, 1947. X is eligible for a merit rate since he has been paying contributions at the standard rate, 2.7 per cent, since January 1943 and therefore meets the experience requirement of 4 years. He has also paid his contributions and made his reports for wages paid up to

June 30, 1946, by July 31, 1946, the contribution deadline for rate computation.

His reserve ratio is determined as follows:
All contributions minus all benefit charges as
of June 30, 1946 (\$30,000)

_____ = 10%
Average annual payroll for years 1943, 1944,
1945 (\$300,000)

Applying this reserve ratio to the schedule of rates in effect in California:

Reserve Ratio	Rate
Less than 7.5%	2.7%
7.5% but less than 9%	2.5%
9% but less than 10%	2.0%
10% but less than 11%	1.5%
11% and over	1.0%

X, with a reserve ratio of 10%, is eligible for a merit rate of 1.5% for 1947.

Benefit Ratio System

Florida	South Dakota
Maryland	Vermont
Michigan	Wyoming
Minnesota	

In the above states, an employer's rate is determined by the relation between his payroll and the benefits paid to his former employees.

A "benefit ratio" is determined for each employer by dividing his benefit charges over a prescribed period (usually 3 years) by his taxable payroll for the same time. Included in the payroll figure are all wages for which contributions are paid by the contribution deadline.

This "benefit ratio" is then applied to the schedule of rates set up by the state, showing the merit rate for the given company.

If your rate is to be low, *benefit charges must be kept to a minimum*. In states where benefit amounts have recently been liberalized, it will be more difficult to reduce the total amount of charges since each individual charge will be greater.

Benefit payments affect your rate for 3 years. While this "short-term experience" is a favorable base when there is little unemployment during the 3 years, it is unfavorable when there is high unemployment during the base years. Under this system, *you can't ride on good reserves*—you must be on your toes all the time.

Example

Employer X in Michigan is determining his rate for 1947. Rates are figured as of September 30, 1946 (the computation date) and go into effect January 1, 1947. X is eligible for a merit rate since he has been paying

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contributions (at the standard rate, 3%) since July 1943 and therefore meets the experience requirement of 3½ years. Contributions on wages paid through September 30, 1946, were paid by October 25, 1946.

His experience index (or benefit ratio) as of September 30, 1946, is figured as follows:

Bens. pd. Oct. 1, 1943-Sept. 30, 1946 (\$16,000) = 2%
 Total payroll same period (\$800,000)

Applying this "experience index" to the schedule of rates in effect in Michigan:

Experience Index	Rate
Less than 1%	1.0%
1.0% but less than 1.3%	1.3%
1.3% but less than 1.6%	1.6%
1.6% but less than 1.9%	1.9%
1.9% but less than 2.2%	2.2%
2.2% but less than 2.5%	2.5%
2.5% but less than 2.8%	2.8%
2.8% but less than 3.1%	3.1%
3.1% but less than 3.4%	3.4%
3.4% but less than 3.7%	3.7%
3.7% and greater	4.0%

X, with an "experience index" of 2% is eligible for a merit rate of 2.2% for 1947.

Benefit Wage Ratio System

Alabama	Oklahoma
Delaware	Pennsylvania
Illinois	Texas
Massachusetts	Virginia

In the above states, an employer's rate is determined by the relation between (1) the State Experience Factor (combined experience of all employers in the State) and (2) his individual experience (which is the relation between his payroll and the wages paid to his former employees upon which benefits were later based).

A "benefit wage ratio" is determined for each employer by dividing his "benefit wages" (wages paid by him which later became the basis for benefit payments) over a 3-year period, by his taxable payroll for the same period. Included in the payroll figures are all wages for which contributions are paid by the contribution deadline.

At the time each employer's ratio is figured, the "State Experience Factor" is determined. This measures the combined experience of all employers in the state.

The employer's benefit wage ratio and the State Experience Factor are then applied to the schedule of rates set up by the state, showing the merit rate for the given company.

Example

Employer X in Pennsylvania is determining his rate for 1947. Rates are figured as of December 31, 1946 (the computation date) and go into effect on January 1, 1947. X has been paying contributions at the standard rate, 2.7%, since January, 1942, and therefore meets the experience requirement of 5 years. Contributions on wages paid up to December 31, 1946, were paid by January 31, 1947.

His "employer's experience" (or benefit wage ratio), as of December 31, 1946, is determined as follows:
 Ben. wages Jan. 1, 1944-Dec. 31, 1946 (\$90,000)

Payroll same period (\$600,000) = 15%

The State Experience Factor for 1947 is announced to be 9%.

The "employer's experience" and the State Experience Factor are applied to the schedule of rates in effect in Pennsylvania (a part of which is shown below):

		And Employer's Exp. Does			
When State Experience Is		Not Exceed			
7% or less	14%	21%	29%	36%	
8% or less	13	19	25	31	
9% or less	11	16	22	28	
10% or less	10	15	20	25	
11% or less	9	14	18	23	
12% or less	8	13	17	21	
Contribution Rate is	1	1.5	2	2.5	

X, with an "employer's experience" of 15% when the State Experience Factor is 9%, is assigned a merit rate of 1.5% for 1947.

Observation

Since the State Experience Factor will probably rise in the next few years as a result of increased unemployment and, in many states, liberalized benefits, it will be more important than ever to keep benefit wage charges down. The same benefit wage ratio nets you a higher rate in a year when the State Factor is higher.

Under this system, a wage charge is made for a separation of a worker resulting in benefits. The duration of unemployment or the benefit rate paid is immaterial.

Benefit wage charges made now will affect your rate for the next 3 years. While this short-term experience is a favorable base when there is little unemployment during the base years, it is unfavorable when unemployment is high during the base period. This means that good reserves cannot cushion the effect of current charges and constant vigilance is necessary.

An increase in payroll tends to lower the rate. However, an increase resulting from higher wage levels is not favorable in the long run since it eventually brings higher benefit charges.

Compensable Separations System

Connecticut

An employer's rate is determined by the relation between his payroll and the weekly benefit rates of former employees and the combined experience of all employers in the state.

An "experience index" is determined for each employer by dividing his taxable payroll for the three preceding calendar years by his "compensable separations" (weekly benefit rates awarded to his former employees) for the same period.

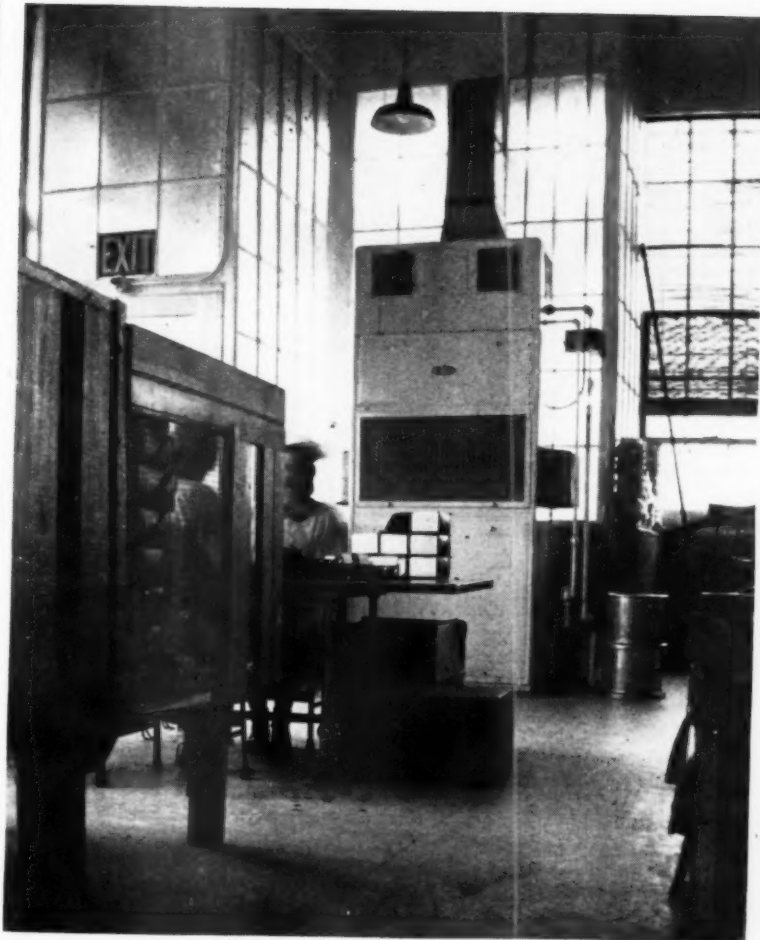
All employers who are eligible for merit rates are then listed in the order of their indexes—the employer with the lowest index first and the employer with the highest index last (the amount of the payroll is listed next to each employer's name). All the payrolls are

(Continued on Page 128)

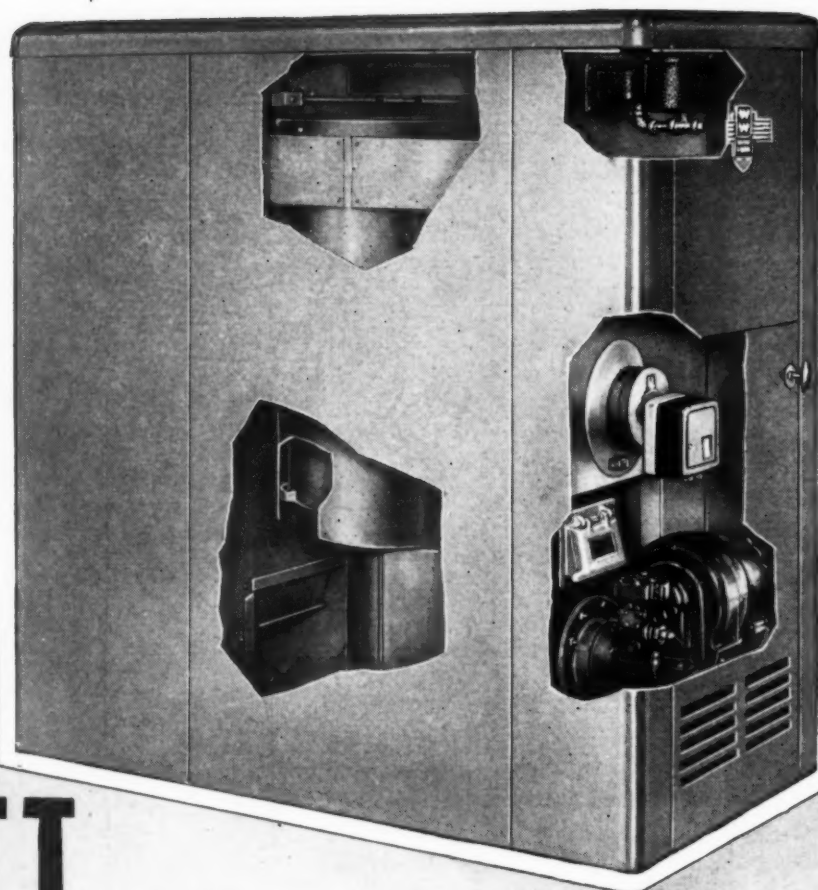


RESIDENTIAL AIR CONDITIONING *Section*

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



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Oil Fired Air Conditioner

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A modern, compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement—but what is equally important to you—because of the efficiency and quality of what is UNDER that casing, you are saved annoying service calls.

Furnaces for every size home and every type fuel—
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AMERIC
RESIDE



Photos by Hedrich-Blessing

Steel Floor Warm Air Panel

By John E. Peterson

A FULL winter season of comfort in a solar house heated by a warm air floor panel—plus circulated warm air—provided H. M. Sloan, builder, Glenview, Illinois, with such satisfactory comfort experiences that he is planning this type of heating in his future building programs. The house, built and occupied by Mr. Sloan and his family, was designed by David S. Barrow, architect of Wilmette, Illinois, and includes a host of features which contribute to convenience, utility and enjoyment of living.

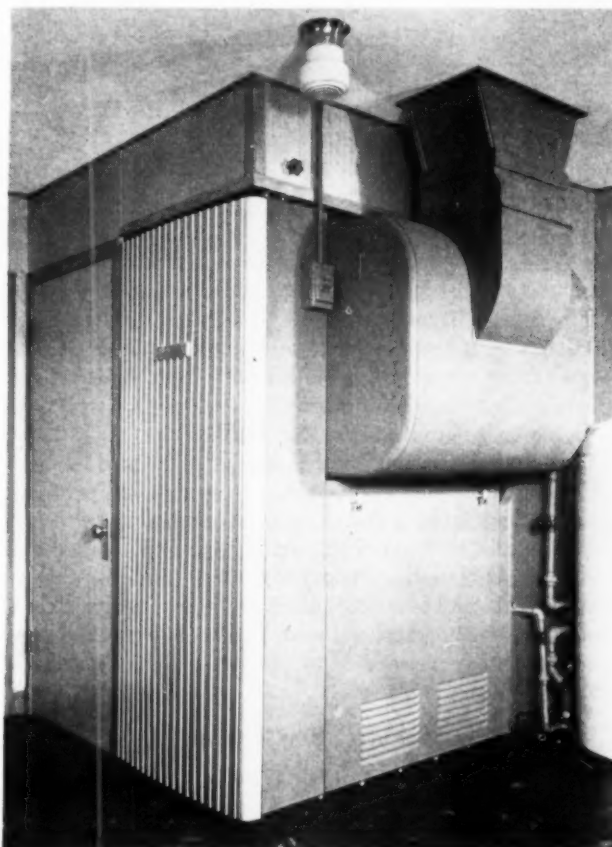
The house faces north, the living-dining room, kitchen and family bedrooms face to the south overlooking a landscaped lawn area through wide unobstructed windows. Three Thermopane windows, each nine feet long and seven feet high, and a glass paneled door form the major portion of the thirty-six foot living-dining room exterior wall. Generous glass areas are used throughout and account for a major percentage of the heat losses. It is one storied and rambling ranch type occupying nearly 100 feet of the 125 foot wide lot, and has no basement.

The Heating Problem

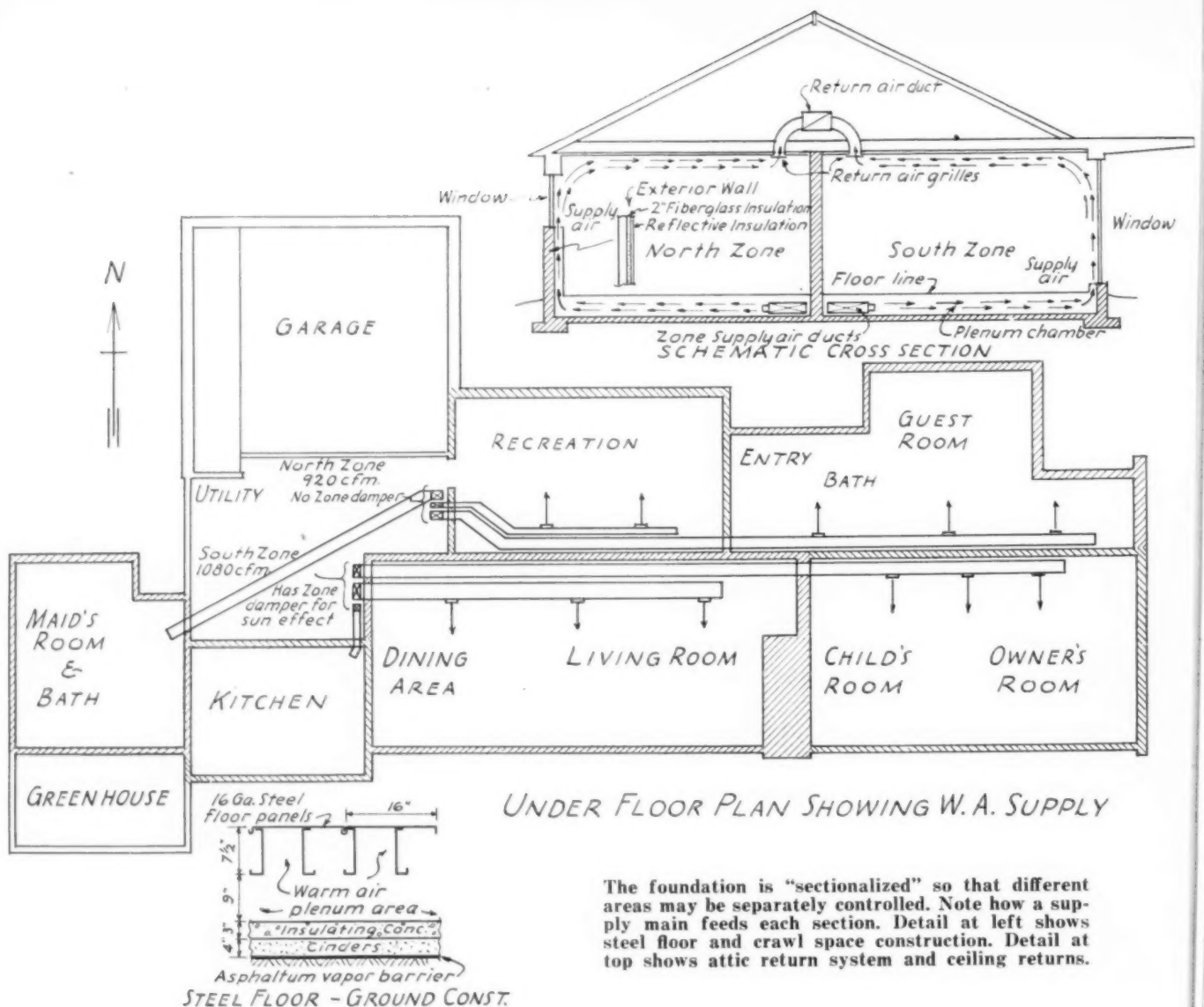
Several constructional features are of interest to the heating engineer. Being basement-less, an 8-inch steel floor suspended across foundation walls forms a combined 16-inch "crawl" space below. The house pioneers sealed construction, all windows being fixed and puttied permanently in place; there is aluminum foil in the outside walls and ceiling which, theoretically at least, reduces the infiltration that is normally anticipated.

Published data from tests and practical experience point to the difficulty of attaining satisfactory floor ceiling temperature gradient and warm floors with conventional heating designs when applied to crawl space and floor slab construction. In view of this inherent problem, aggravated by cold air descending along the large window surfaces and spreading across the floor, a more reasonable insurance for comfort was

required in the design of the heating system for the Sloan home than has been attained by many conventional systems. While floor panel heating banishes cold floors, it has been observed that air currents descending along large windows remain stratified for several feet as they flow inward until sufficient heat is



Above—The gas-fired, year 'round, air conditioning unit (Servel) showing return duct through ceiling—warm air ducts are behind door at left. At top of page—Garden side of house (rear) showing large solar windows in all rooms.



The foundation is "sectionalized" so that different areas may be separately controlled. Note how a supply main feeds each section. Detail at left shows steel floor and crawl space construction. Detail at top shows attic return system and ceiling returns.

imparted by the floor panel to cause them to elevate and become diffused. Extensive window areas as in the Sloan house would set significant quantities of low temperature air in motion unless sufficiently high temperature is provided immediately below the windows to cause these currents to rise and diffuse.

Sealed construction in this house retards dust and air infiltration, but at the same time retards exfiltration of deviated air and vapor incidental to occupancy, while a number of rooms have no provision whatever for opening to outside air. Controlled ventilation provides for the dissipation of accumulated humidity, freshens the air and, together with the large window areas, obviates the normal psychological reaction to closed spaces.

Panel Heating Interest

Numerous unbiased and non-technical observers have recognized in the intense public interest in radiant heating a desire for one thing: WARM FLOORS. Heat in the floor immediately captures the fancy of the prospective builder. Floor panel heating to him means warm feet, comfort, children playing on the floor and an unobstructed living space. It overcomes

the apathy to basement-less construction by overcoming the inherent problems of cold floors. It provides a means for the prospective home builder to exercise his privilege to select a basement-less home if he deems it desirable to do so.

The drawings show the Sloan house design. Warm air is delivered to a noncombustible plenum under the floors of the rooms heated. Quantities and temperatures of air are determined similarly as those of heating a room; in fact, the plenum may be considered as a room having heat flow through its ceiling, outside walls and floor; the flow through its ceiling being utilized to heat the room above, while that through the walls and floor (ground) must be considered as lost, adding to the total heat load of the structure. Obviously, losses to the ground must be retarded by the use of suitable barriers, while flow through the floor of the room above should be facilitated by selecting a material of high heat transmission value. A supply air temperature of 120° as it enters the plenum appears optimum and calculations indicate a general plenum temperature approximating 90° should result throughout the plenum. This low supply air temperature reduces heat loss as the air is con-

veyed through underfloor ducts to the most distant rooms; reduces the plenum temperature and correspondingly the losses; prevents excessive floor temperatures in the rooms above; while the resultant increased volume of supply air insures complete mixing effecting a uniformly temperatured plenum and thereby an unusually uniform floor temperature as compared with pipes, tubes or channels imbedded in slabs.

After the supply air imparts a major portion of its heat to floor heating, the entire quantity leaves the plenum at approximately 90° temperature through insulated ducts and grilles located along the window sills, where it is discharged vertically over the window surfaces. Velocities of 200-500 feet per minute have been found to be sufficient to reverse the normal window currents, causing them to mix and rise with the supply air to the ceiling above the occupants. At 20° temperature difference between supply air and room air (90°-70°) each cfm. contributes about 20 BTUH toward heating. Thus, an important quantity of heat is injected at the source of greatest loss and at the same time prevents window currents from spreading across the floor in the occupied space.

The floor becomes a radiator of uniform temperature and noncombustible materials such as steel, concrete, gypsum plank, etc., insure its being a major source BTUH input. However, retarding the panel's

efficiency by the use of floor coverings does not present a serious problem because tests indicate that the system readily adjusts itself by varying the proportions between convection and radiant heating.

Since temperature gradients between floor and ceiling with warm air floor heating have been found to be negligible, and since the combined panel-convection system provides for the major portion of heat delivery by the radiant floor, to which is added the advantage of eliminating the effects of window currents, return grilles may be located in the ceiling or at any level on the inside walls, whichever is most expedient. For year around air conditioning high locations provide a means to syphon off hot air during the summer cooling cycle.

Considerable profound theory and mathematics have been presented for the design of radiant heating sys-

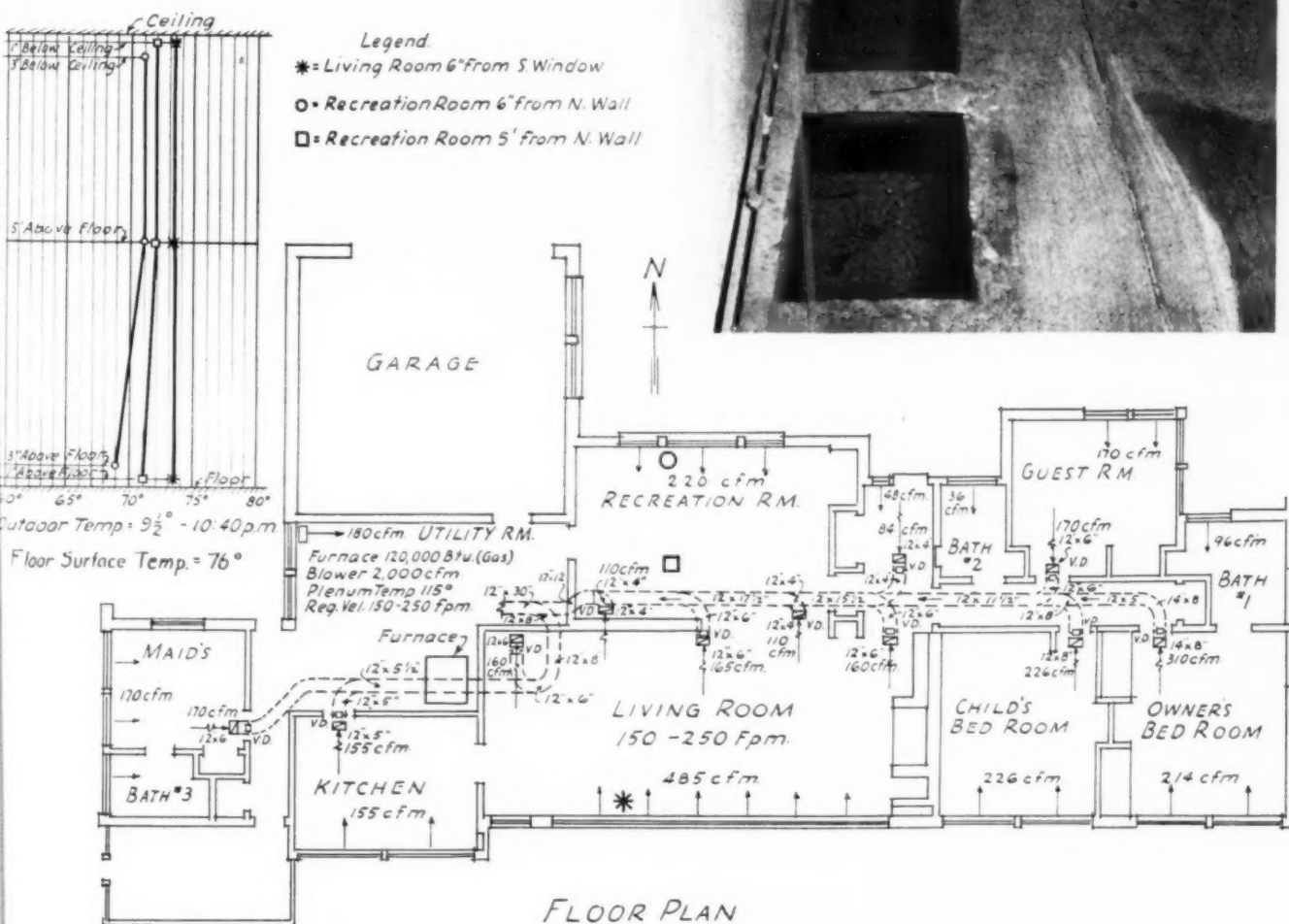
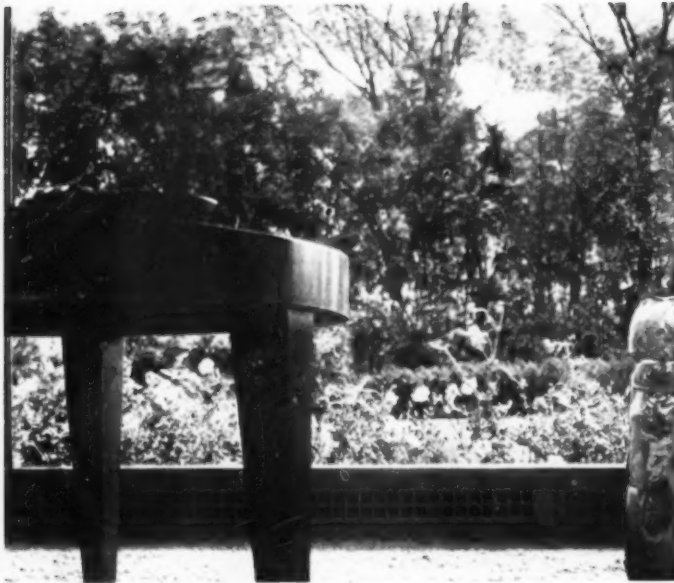


Photo shows holes in steel floor for supply mains. Plan shows supply layout with a grille under every foot of window. The piping system shown dotted is the return system in the attic. The temperature chart (upper left) shows the uniformity of temperatures from floor to ceiling at three locations as spotted on plan.



The supply grilles are under the window sills. This is a living room view under a solar window. The grilles can be placed in the sill with proper framing.

tems. Design for heating the Sloan home was based on the premise that calculated heat losses have been a reliable index of the heat load of a structure. Experience has proven that if the correctly calculated BTU's are available and distributed properly, design conditions will be met irrespective of whether the heat units are delivered in the form of radiation or convection. A panel-convection system recognizes that houses have been heated comfortably in the past and that all systems resolve into a combination of radiation and convection. As the entire floor area becomes a large radiator, it is reasonable to assume that the percentage of heat from radiation is increased.

In view of the problems that were presented, a system combining the advantages of floor radiation and the flexibility of convection was designed from the common equations which recognize the release of heat units across the system, from the supply air temperature as it enters the plenum to the return air temperature as it leaves the room.

Application

A cross section of the steel panel floor is shown in detail, the plenum being approximately 16 inches from the floor surface to the top of the insulated ground. Table 1 lists the calculated losses for each room, the plenum losses to the ground and through the outside foundation, the sum of which represents the total BTUH required to be delivered to the plenum area below each room. A temperature difference of 50° ($120^{\circ} - 70^{\circ}$) approximates a release of 50 BTUH for each cfm. as the warm air travels through the plenum, giving up a major quantity of its heat to the floor radiator (and some to the ground and outside walls), leaving the plenum at approximately 90° and passing through the supply grilles in the window sills in the room above. There it mixes with window currents, releasing the balance of its heat, and leaves through the ceiling return grilles.

TABLE I
HEAT LOSSES

Room	Loss from Room, BTUH	Loss from Plenum, BTUH	Total Loss, BTUH	Required CFM
Living-dining	15,783	2,700	18,483	370
Kitchen	5,365	825	6,190	124
Bath No. 3.....	1,698	200	1,898	38
Maid's	3,285	525	3,810	76
Recreation	7,530	1,470	9,000	180
Entry	3,162	680	3,842	77
Bath No. 2	1,134	205	1,339	27
Guest	5,347	700	6,047	121
Bath No. 1	2,832	320	3,152	63
Owner's	7,100	1,125	8,225	164
Child's	4,880	940	5,820	116
	58,116	9,690	67,806	1,356

Room BTUH Loss: Glass + Wall + Ceiling + Infiltration*
Plenum BTUH Loss: Ground + Outside Walls

BTUH (Total)

CFM: $\frac{\text{Total BTUH}}{50} = .02 \times \text{BTUH}$

$.24 \times 60 \times (120^{\circ} - 70^{\circ}) \times .0685$

Ventilation: $300 \times .24 \times .075 \times 60 \times 80^{\circ} = 25,920 \text{ Btuh}$

*Infiltration: $\frac{1}{2}$ air change per hour.

House and distribution losses..... 67,806
Provision for max. ventilation..... 25,920

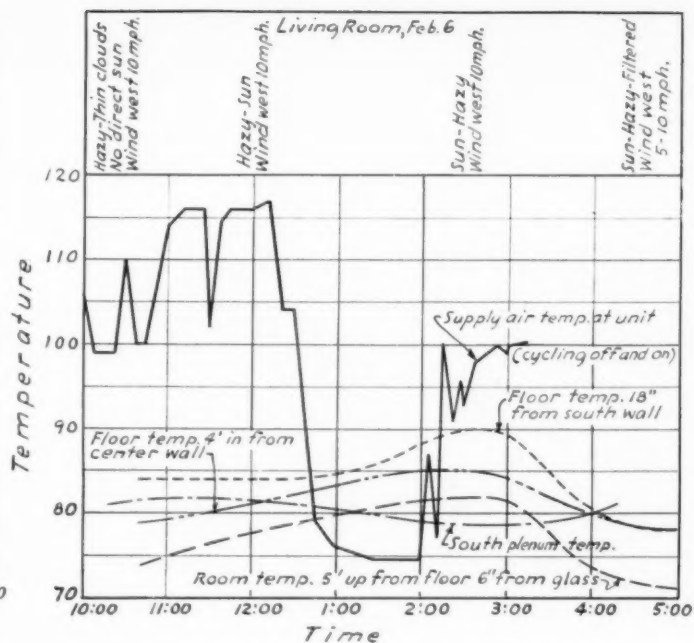
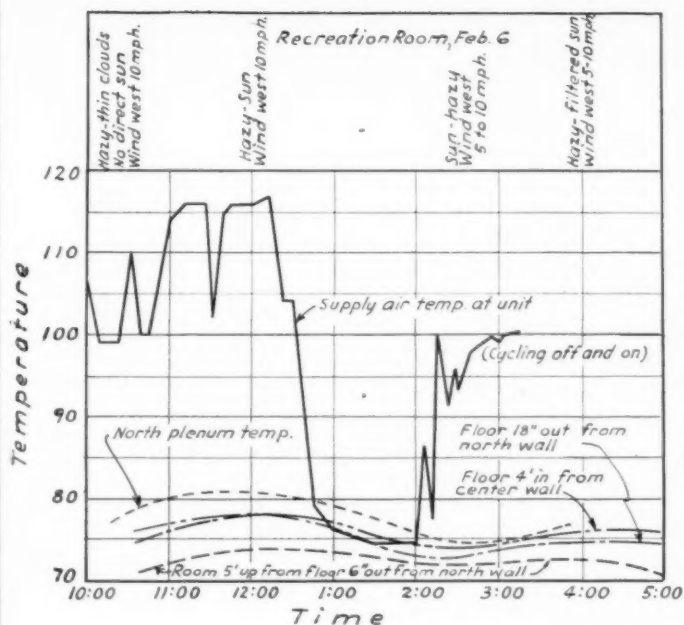
Max. heating load 93,726

While sectionalizing a more moderate sized house does not appear to be indicated, this house, being nearly 100 feet long, was divided into six plenum areas or sections, each supplied with a separately dampered supply duct as a means to balance the heat distribution and thus insure uniform temperature distribution in the rooms above. Both the sections and supply ducts are shown in the foundation plan. The six sections are formed by Haydite block walls as shown on the foundation plan.

Prior to installing the plenum ductwork, the ground under the entire house area was leveled and asphaltum paper was laid and sealed to provide a moisture barrier. The paper was covered with a 3-inch layer of tamped cinders over which was poured 3 inches of 6 to 1 mix vermiculite insulating concrete, completing the protection of the plenum from both moisture and excessive heat loss.

An insulated return air duct in the attic connects the gas air conditioner in the utility room with the ceiling return air grilles. This duct, being exceptionally long, required insulation in view of the extreme temperatures experienced in ventilated attic spaces.

A gas-fired Servel Air Conditioning Unit rated: 120,000 BTUH input, 96,000 BTUH output, 2,000 cfm., was installed in the utility room and connected to the underfloor supply ductwork and the return duct in the attic. Although the sealed construction apparently restricts infiltration, conservatism dictated calculating one half air change per hour. In anticipation of the need for supplementary ventilation the furnace capacity is sufficient to provide 300 cfm. of outside air at design or more than one air change per hour.



The bottom curves in each chart show floor surface temperatures at selected points in two rooms. The top line shows the supply air temperature. The text immediately below describes the conditions under which the charts are made.

Results

The comfort conditions obtained on a typical winter day are shown in the two operating charts—one for the living room and the other for the recreation room. The top curves on both charts show supply air temperatures—at the unit. It will be noted that the supply air temperature drops precipitously at about 12:30 P.M. when sun or sky radiation effect became noticeable and stops at 3:00 P.M. when the unit began to cycle from partial input to the “off” position.

The bottom groups of curves on both charts represent floor surface temperatures at different points; also room temperatures at the 5-foot level and close to the windows; also plenum temperatures. The upward line of the curves for the living room between 2:00 and 3:00 P.M. show the effect of heat from the sun—no sun effect was obtained in the recreation

room, which has an exposure to the north.

On the day these recordings were made the outdoor temperature was 9 degrees above at 10:00 A.M., reaching a peak of 17 degrees at 3:00 P.M. and lowering to 15 degrees at 5:30 P.M.

The floor construction in these two rooms is to be considered in analyzing the recorded temperatures. The floor in the recreation room consists of the steel floor panels covered with a thin layer of sheet steel on which is a layer of “Floorcrete” and on this a layer of asphalt tile. The living room floor is identical except that in the place of the asphalt tile there is a heavy layer of “Ozite” and carpeting.

In summer this system will be used for cooling (an important feature of the system but not under discussion here), with the air flow moving just the same as in winter heating.

House Construction Propaganda

NORMAN P. MASON, president, National Retail Lumber Dealers' Association, speaking at the 35th annual Chamber of Commerce of the United States convention, pointed out that the propaganda which has recently been released by numerous agencies and by the Federal government, in particular, in hundreds of published statements, radio broadcasts, etc., emphasizing such themes as “Don't Build Now”; “Don't Take Essential Materials Away from the Veterans”; “Costs of Building are Too High”; “Lumber is Poorly Seasoned”; etc., has been so pronounced and so prolonged and in many cases so successful that even members of the building industry itself have begun to believe the propaganda.

One important fact overlooked in such propaganda is the fact that many materials required for housing

are daily becoming more readily available and while there are some scarce items, there is now an adequate supply of most of the common construction materials.

Another fact pointed out by Mr. Mason is that the construction of high-priced houses in metropolitan areas have been so featured in the public press that the great number of lower-cost homes built in towns and cities of 25,000 population or less has gone unnoticed. A survey indicates that of the houses built by speculative builders and home owners in these smaller communities, 54 per cent of the houses were priced under \$7,500, 22 per cent were under \$5,500, 6 per cent were under \$4,750, 4 per cent were under \$3,750—leaving only 14 per cent priced above \$9,000. All of these prices included the price of the land and the utilities as well as the house itself.

"If It Had Been a Snake-- It Would Have Bitten You"

By Martin E. Marsalis

Associate Member, A.S.H.V.E.: Member, American Society for Metals:
Owner, American Metal Products Company, Fort Worth, Texas

This is the last of three articles by Mr. Marsalis. Quite informal in style, the three articles have not attempted to present an engineering "quickie" on evaporative cooling but have, instead, tried to impress on readers this one fact—evaporative coolers will do a satisfactory job if a properly designed unit is bought from a reputable manufacturer and an intelligent dealer. Makeshift, improperly designed and installed units do not build customer satisfaction.

Junior: Mama, I can't find it anywhere.

Mama: Junior, are you sure you've looked everywhere?

Junior: Yes, I guess it's just lost. I've searched the whole house.

Mama: Well, here it is. Right under your nose! If it had been a snake, it would have bitten you!

MY Mother was a born experimenter. Trying out new ideas was an everyday occurrence with her. Ordinary and accepted ways of doing things were a constant challenge to her. She not only refrained from discouraging my desire to take apart the mechanical devices in our home, but became my enthusiastic assistant.

Her propensity along these pioneering lines was reflected in our menu, our dress and manners, the plumage of our chickens, Father's grocery store, to mention just a few things. Our conservative neighbors stood somewhat in awe of her "unladylike" actions.

We owned two old style, large, electric fans. Mother was forever shifting these fans about, seeking better cooling results. On one hot, sultry night, during mid-summer, mother appeared in our bedroom with one of these fans and a basin of water. Placing the fan in the entrance to our bedroom and on the floor, she calmly proceeded to liberally sprinkle the "matting" floor covering with water. We children were dumfounded, but excited. The airstream from the fan passed over the moistened floor covering and subsequently over our beds. The cooling result was delightful.

That was my introduction to evaporative air cooling, although I failed to recognize it as such, until many years later and mother was no longer with us. This episode occurred during 1912.

Mother was blissfully unaware that our city (Hattiesburg, Mississippi) was later to be considered by many experts as being in an area where evaporative cooling "would not work." She and our equally non-expert neighbors simply continued to use this method of cooling, leaving informed and critical opinion to be dealt with by posterity.

Early Experiments

During the early nineteen thirties, as a so-called expert, I joined others of my fraternity in condemning this cooling principle, except possibly for use in arid or semi-arid regions.

No one denied the great need of air coolers which would enable persons of average means to have summer cooling. What was needed was thorough and unprejudiced investigation to establish the actual possibilities and the limitations. After a couple of years of laboratory tests, it became clear that actual, field tests were mandatory, so for the next few years, we made numerous test installations around the gulf coast, including Hattiesburg. Our reasoning ran thus: If evaporative air cooling proved acceptable to residents in areas having extremely high humidity, we need have no fears as to its acceptance in inland areas where average humidity conditions were more favorable.

My last visit to our "test" areas was in 1942. Many of our handmade, unsightly, bulky units, were still in use and many other and newer units were visible—evidently users found them better than plain air circulation, even in such unfavorable areas.

The Public Accepts

As a general statement, it probably can be said that no informed manufacturer will spend sales dollars in an effort to stimulate sales of evaporative air coolers in unfavorable areas because the amount of missionary work and sales training required precludes adequate return on the investment.

However, many thousands of evaporative air coolers now in constant use in areas previously considered unsuitable for their use tell their own story and point up the truism that—public acceptance, or rejection, is not accomplished by engineers, or “near-engineers”; the users pass final judgment on any device, and users have found evaporative air coolers acceptable in almost any inland area.

Requisites for a Cooler

For use in arid or semi-arid areas, almost any unit, even though design and construction is poor, will produce reasonable results.

But: Most of our population lives in areas which have higher relative humidity than arid areas, consequently, much greater care must be taken in unit construction, if satisfactory results are to be expected.

(1) Very careful balance must be maintained between the area of the cooling pads and the fan capacity. This governs, largely the speed of air through the moistened pads. Speeds which are too high, put excessive moisture in the delivered air. Speeds which are too low, result in insufficient evaporation and low heat conversion.

(2) Pads must be much thinner; this makes the distribution of fibre in the pads highly important because bare spots in a pad admit disproportionately large quantities of hot air.

(3) Water distribution over the pads must be carefully controlled. Many Coolers built for desert use depend on large volumes of water to overcome inadequate distribution of water over the pad. This is not practical for use in most United States areas. Large volumes of water invariably are accompanied by wild streams and bouncing droplets. This uncontrolled water is picked up by the fan and deposited in the room.

(4) Proper distance must be maintained between fan blade and pad, otherwise, raw moisture will be picked up and forced into the room.

(5) Propellor fans which are most suitable for homes and small offices, due to lower first cost and operating expense, require especial care in their design. While this type of fan is normally very quiet in operation and delivers large volumes of air at a minimum expense, placing a cabinet around it poses a multitude of problems and restricted air delivery, excessive noise and vibration will be the result, unless the designer has full knowledge of the problems involved.

(6) Of paramount importance is appearance. Most of the earlier units were unsightly, when viewed from

either outside or inside of buildings on which they were installed. In outward appearance, they bore a close kinship to a “bale of hay.” Sales resistance was high.

Appearance need no longer be a factor in sales resistance. Modern units are now available which compare very favorably with other fine furniture. Exterior appearance has been enhanced by streamline cabinets which if properly designed, permit high performance with none of the unsightly bulk formerly associated with these units. Viewed from the interior of the home or office, the modern unit, with its use of plastics and streamlined appurtenances, is a pleasure to the eye.

While no reasonable person expects the dealer or user to be an expert in distinguishing between good and bad units, years of experience in selecting other mechanical devices has pointed a way: “Buy only from manufacturers with time proven experience in air handling and air treatment.”

A product is as dependable as the manufacturer behind it.

The Dealer

Uninformed, or improperly informed, dealers and their salesmen are the most serious threat to obtaining good results with this type of air cooling. Even though first class units are used, ignorance or negligence can bring about poor results.

No reason exists today for the dealer to be poorly informed. Dependable and alert manufacturers offer clear and concise literature on this subject, usually available at little, or no cost.

Properly fortified with the simple but highly essential facts concerning evaporative air cooling, dealers can offer with full confidence:

Dependable units with fine “eye appeal,”

Proper installation, at low cost,

Proper operating instructions to the user,

First class cooling results.

The User

The average user's opinion of proper use of any type of air cooler is often formed either through his experience in large buildings cooled by refrigeration, or advertisements by makers of refrigeration equipment.

Evaporative air cooling requires different operating use. Although all reliable manufacturers of such units pack operating instructions with each unit, information supplied by the dealer salesman “gets over” better.

An uninformed user can cancel out all the best efforts of manufacturers and their outlets.

If you are looking everywhere for PROFITS, THEY ARE RIGHT UNDER YOUR “SUMMERTIME” NOSE. DON'T LET THE SNAKE BITE YOU.

Editor's Note: Reprints of the series of articles on the subject of evaporative cooler design and operation published in A A last year are available at a price of 25c per copy from Mr. Marsalis.



Quality of Installation Keynotes Contractors' Success

This article is offered as proof that the old copybook maxims have not lost their efficacy. Arno Gerdsden of Cincinnati has established his business on the theory that every job should be as good as he can make it and the photo above shows a typical home that he has heated.

BORROWED capital of \$25 and a will to succeed were the assets of Arno H. Gerdsen of Cincinnati, Ohio, when he started his heating business in 1931. Dealers with eyes on the heating equipment markets ahead might well rest them a moment, look away from the glittering future before finally charting their course, to see how Gerdsen developed his depression-born business to become one of the largest dealers in gas-fired heating equipment in his city.

There is one distinguishing trait about Gerdsen now and when he started business. When he has a good idea he won't let go. He had an idea that he

wanted to get married back in 1931 and since he couldn't get a job in those grim days, he made a job by going into the heating business. He had an idea that the heating business was a good one and he stuck to it through the long depression years despite the frequent temptation to toss in the sponge. He had the idea that it takes both good equipment and good installation to make a really good heating job for a customer and has held to it, despite the large and profitable orders which were his for the taking if he would skimp the job. And he has been rewarded for his perseverance.

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Anyone who remembers those early 30's knows that 1932 wasn't any better for business than 1931, nor were the following years. If this story skips lightly over them, certainly Gerdson didn't at the \$9 a week average income he made. Much more money was to be earned on WPA relief work. The break for the future heating dealer came late in 1933 when the local gas company recommended young Gerdson to Surface Combustion Corporation, Toledo, Ohio, which was looking for a man to install Janitrol heaters. Arrangements were concluded. Jobs turned up by the manufacturer's representative began to keep the young man busy.

By the time 1935 arrived business had reached such proportions that Gerdson had to stop working directly on contracts to supervise the work of the crews he had employed. That girl who provided the impetus to start a business in 1931, so he could get married, had by now become Mrs. Gerdson. They were married in 1933, not because business had improved since



Arno Gerdson, subject of this article.

1931, but because both were tired of waiting. She had continued in her employment as a bookkeeper. After they were married she came to help in her husband's office, made sure that all bills were discounted and that all records and accounts were in order. That made a difference in a young, growing enterprise.

During these early years in business Gerdson started to get acquainted with the manufacturer of the product he sold. There were several times when that relationship helped him through a tight squeeze. There was the time the company's credit manager first called and decided to extend credit where there was no assets in sight, except the character of the dealer. Other times followed when the close association between dealer and manufacturer proved of the utmost value.

The successful Cincinnati dealer is one of the very few who handle the products of one manufacturer

exclusively. Unquestionably, he has a feeling of loyalty towards the manufacturer who helped him out with encouragement when it was most needed, co-operated in sales promotion and extended credit, but Gerdson attributes his policy strictly to good business methods.

A dealer who sells more than one manufacturer's line of heating equipment, this dealer says, cannot talk only about the merits of one, so all there is to sell is price. There is nothing else to talk about. Superiority of equipment means much in selling and a dealer should have the opportunity of talking and selling that superiority, he believes.

Concentration Beneficial

Prestige of a good name is another selling point of importance, Gerdson feels, and he has shown ingenuity in capitalizing on that. Although he doesn't have an exclusive Cincinnati franchise, he has so closely identified his company with the product it sells that he has, in effect created an exclusive franchise.

It is not a case, however, of the Cincinnati dealer riding on nationally-famous name. Knowing that good equipment alone cannot make a good heating job, he has insisted on high standards of workmanship on every contract. The favorable impressions thus made are doing as much to increase the prestige of the manufacturer's name in the area as that name has increased Gerdson's prestige.

Prestige did not spread simply by word of mouth. Gerdson developed a sales presentation book said to be one of the best used by any dealer. He advertised consistently. He exhibited his product at expositions. He had a real story to tell and he told it effectively.

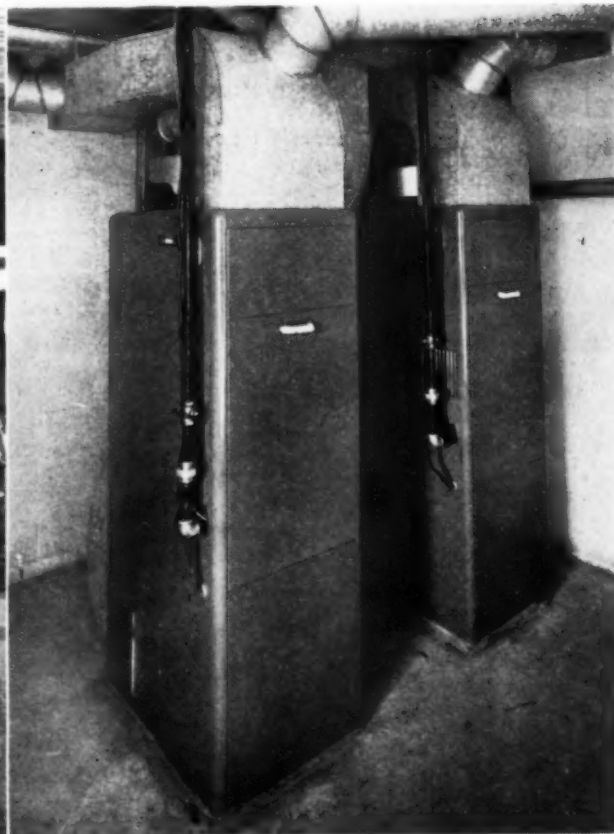
This heating contractor also was ready with new and practical ideas to solve customers' problems. For example, the first Cincinnati installation of forced warm air heating units for each suite of an apartment building was made by Gerdson. This was on a small apartment remodeling job several years ago and was one of the first heating installations of its kind in the country. (Shown on facing page.)

Good Work Is Costly

Every dealer-contractor in the heating business knows that higher standards of equipment and work mean somewhat higher prices and that the difference sometimes loses jobs. What happens in that case? Well, for example, there was a large residential development in the community before the war. The specifications on the warm air heating contract didn't call for good installation work. Gerdson's price was "high" and he didn't get the contract. During the war, however, the same project gave Gerdson many repair jobs when new equipment was unavailable. The owners of the houses turned to the "higher priced" man to correct the faulty work of the "low bidder." What they tell their friends will bring more contracts for Gerdson over the years than the number he lost.

Speculative builders are noted for their resistance to spending a few dollars more for a subcontract or product when outwardly it appears no different

At the left below is a photo of a portion of the Gerdson shop while the picture on the right shows a typical installation, well-tailored and finely finished. This particular job was for a small apartment building.



from another at a lower price. One large Cincinnati builder had been seen by Gerdson a number of times over a three-year period to no avail. The "higher priced" heating dealer-contractor just couldn't get in until by a happy coincidence Gerdson won a forced warm air heating contract for the house of the builder's brother-in-law. The builder saw and felt the difference when he visited the house and gave Gerdson contracts for 18 jobs afterwards, stopping only when war stopped residential construction. The builder is becoming active again and has declared his future heating business will go to Gerdson. The builder discovered he had acquired a big selling point for a few extra dollars.

Price Not the Whole Story

The Cincinnati dealer-contractor is convinced that operative builders can be sold superior heating jobs, especially those builders in business to stay. In fact, a number who received complaints from the buyers of their houses have switched over to the higher priced sub-contract with Gerdson. Builders are learning to sell quality instead of price just as heating dealers are, he points out.

By some standards Arno H. Gerdson is not a wealthy

man. By what are possibly more important and lasting standards, he *is* wealthy. He has a wife who has been by his side through 15 years of business, two young sons, a comfortable suburban home, a substantial business of his own and high standing in his business community. When he founded the business back in 1931 he little thought of the time he would be called in by the city's leading architects as a consultant on heating problems or would be a member of the American Society of Heating and Ventilating Engineers, or when he would be called by many Cincinnatians to take a contract without any mention of price.

The story is not over yet. Gerdson is still relatively young, he has his health, he managed to keep his business active on repair work during war shortages, he had a city-wide reputation as a dealer in quality gas heating equipment and there is the big trend to gas fuel. So, with the rich gas heating equipment market ahead for him, too, as well as for the new dealers in the field, he has a business with a great future.

Some may choose to rush for the quick profits. Gerdson plans to continue to sell one brand of heating quality, hold to his good ideas and build business for the future as well as for today. He knows the road to a successful business is not via the short and easy route.

ATTIC VENTILATION CODE*

This code sets forth the basic requirements of satisfactory attic ventilation. Owing to the variety of structures to which such a code is applicable and to the variety of equipment now on the market, no effort is made to confine this code to any specific type of structure or equipment.

1. GEOGRAPHICAL VARIATIONS IN HOUSE STRUCTURES

Wide differences in the types of houses in Northern and Southern climates must be noted in considering attic ventilating installations.

The majority of dwellings in Northern climates have either open attic spaces or flat roofs with no free attic space.

In houses with open attics, the fan should discharge through an existing window or through an opening provided for the purpose either in an end wall or in a dormer in the sloping part of the roof. In either case the air is discharged directly to the outside, the attic acting as a plenum chamber.

In houses with flat roofs, it is necessary to provide a penthouse, with the small space between room ceilings and roof acting as a plenum chamber.

Openings with grilles should be located in the proper places to provide suction openings for fan.

In Southern climates, the majority of houses have unfinished attic spaces in which the fan unit can be located to discharge to the outside through suitable openings in attic walls.

The above types of houses cover broadly the problems to be met in attic fan installations, and houses of both general classifications are located in both the North and the South.

2. LOCATION OF VENTILATING UNIT

Fans which exhaust directly to the outside from the attic space should be located so that they discharge with and not against the prevailing wind.

Fans which exhaust into the attic from the space below should be located over a central hall so as to be as nearly as possible the same distance from all the rooms to be ventilated. Where no hall is available, the same applies to any room that may be selected instead. Care should be exercised to see that the discharge from the fan is as far as possible from adjacent walls, chimneys, etc. A minimum distance of six to eight feet should be maintained if possible.

3. TYPE OF FAN UNIT AND CHARACTERISTICS

The fan should have quiet operating characteristics, either belted or direct connected, mounted in a substantial frame and equipped with resilient mounted

motor or other form of shock and sound-absorbing construction. When operating against a pressure up to .10 inch of water head the fan should deliver not less than 75 per cent of its free air CFM rating; .10 inch static pressure is the maximum head anticipated if the installation is made in accordance with this Code. This means that an effective air movement of at least 75 per cent of the free air CFM rating of the fan would be drawn through the house for ventilating purposes.

4. AIR CHANGES PER MINUTE

No definite figure can be set up for the number of air changes per minute that should be provided. The rate of air change depends not only on the climate and locality but also on the individual preference of the user. Practice and experience have determined, however, that in 95 per cent of the cases in the extreme South a net air change of once a minute is satisfactory, while for locations farther North it is enough to change the air once every two minutes. Dividing the gross cubic contents of the house by the free air delivery of the fan in CFM will give the number of air changes which the fan will provide per minute.

EXAMPLE

Gross cubic contents of an 8-room house in the extreme South is 10,000 cubic feet. Select a certified fan rated to handle 10,000 CFM free air delivery. The unventilated portions of the house will compensate for the net air losses due to static pressure on the fan of .10 inch and a net air movement of not less than 7,500 CFM may be expected. Air velocities inside the house will vary according to the number of openings through which air is drawn and the relative locations of these outlets and the ceiling grille. The occupant can regulate to suit requirements by adapting the various combinations of openings to suit his comfort.

5. AIR VELOCITIES THROUGH GRILLE AND FAN UNIT

Air velocities through the ceiling grille or shutter should not exceed 700 to 800 feet per minute in order to keep air noise and static head as low as possible. Since the average velocity of the air leaving the fan ranges from 1,200 to 1,400 feet per minute, we can establish a rough ratio for ceiling grille or shutter area to fan orifice area of approximately two to one. This ratio is based on a grille opening of 84 per cent of the gross area. Grilles may be either of notched

*Prepared by Engineering Committee of Propeller Fan Manufacturers' Association, Detroit, Mich.

wood ("egg-crate") construction with 3 in. square openings or expanded metal with 1½x3 in. diamond mesh and are located in the ceiling.

6. ATTIC DISCHARGE VENTS

The most important factors to consider when providing discharge vents in unfinished attics are the correct area and location. Unless structural difficulties interfere there should always be a number of discharge vents rather than a single large one. Since the velocity through such an opening should not exceed six to seven miles per hour, a slight head wind might, to a great extent, nullify the effectiveness of the installation. If a number of openings are employed at different points of the compass, a head wind from any single direction has little effect on the performance of the fan. Vents in the ceiling of a porch whose roof forms part of the attic space are particularly valuable since they discharge downward and are relatively free from back pressure due to head winds.

To keep out birds, all discharge vents should be covered with ½ inch mesh hardware cloth. This decreases the net area of the discharge vents by 20 per cent and the contractor should allow for this when figuring vent openings.

Discharge vents should be of such size as to keep the velocity through the vent from exceeding 400 to 700 feet per minute.

EXAMPLE

A fan of 10,000 CFM free air capacity should have discharge vents with a minimum net area of 20 square feet, or 24 square feet if covered by ½ inch mesh hardware cloth. In the same example, wooden louver vents should have a gross area of about 30 square feet and fixed metal louvers 25 square feet.

If mosquito screening is required, all discharge vents should be double the sizes already recommended. Do not use mosquito screening if possible to avoid it, as it clogs up with lint and dust and needs frequent cleaning. To sum up, types of discharge vents include (a) side wall louver openings; (b) soffit outlets; (c) outlets between rafters; (d) porch vents; and (e) roof ventilators.

7. FAN HOUSING AND PLENUM CHAMBER

Fan housings or plenum chambers are of two types: (a) prefabricated and (b) tailor-made to fit the job. Each has its advantages.

Prefabricated plenum chambers are usually the product of careful design and engineering on the part of some responsible company. The prefabricated type meets the requirements of over 90 per cent of the installations in unfinished attics. The special cases where this type is not suitable, such as finished attics or penthouse installations, require tailor-made installations to fit conditions.

Prefabricated plenum chambers should be constructed of sound-deadening material supported on skeleton wooden frame. Fabricated steel plenum chambers should be lined or coated with sound-deadening material and so constructed as to be free from vibration. The fan should be located at least one diameter from

the grille opening so as to be invisible from below and minimize fan noise. If sound-deadening material is provided between the fan casing and plenum chamber, a canvas throat connection is not necessary. Otherwise the connection between plenum chamber and fan casing should be No. 10 canvas and not less than six inches long.

The top of the plenum chamber may be horizontal or may slope down from the fan, but in no case should the cross section be reduced so much that it causes resistance to the air flow.

Automatic ceiling shutters may be installed instead of a mechanically operated flap door, operated by means of rope and pulley.

When an automatic shutter is installed over the grille opening, the vanes should open towards the fan in the same direction as the air flow. The shutters should cover the entire suction opening and be of such size as not to restrict the air flow.

The fan case should be mounted either on rubber shock absorbers or on a sound-deadening pad. The fan and plenum chamber are mounted on a platform extending over the grille and the plenum chamber should be as nearly air tight as possible so as to get the full benefit of fan capacity in the area to be ventilated instead of merely recirculating attic air.

8. PROTECTION AGAINST WINTER HEAT LOSSES

Openings, whether louvers, porch grilles, soffit outlets, etc., should have removable or hinged covers of insulation board to cover them in the wintertime. The grille opening or automatic ceiling shutter should be provided with a similar cover. An alternative is to insulate the attic floor with rock wool or similar insulation. The latter solution is the best from an operating standpoint because the fan can then be operated for a few moments in wintertime to freshen up the air in the house.

9. ELECTRICAL INSTALLATION

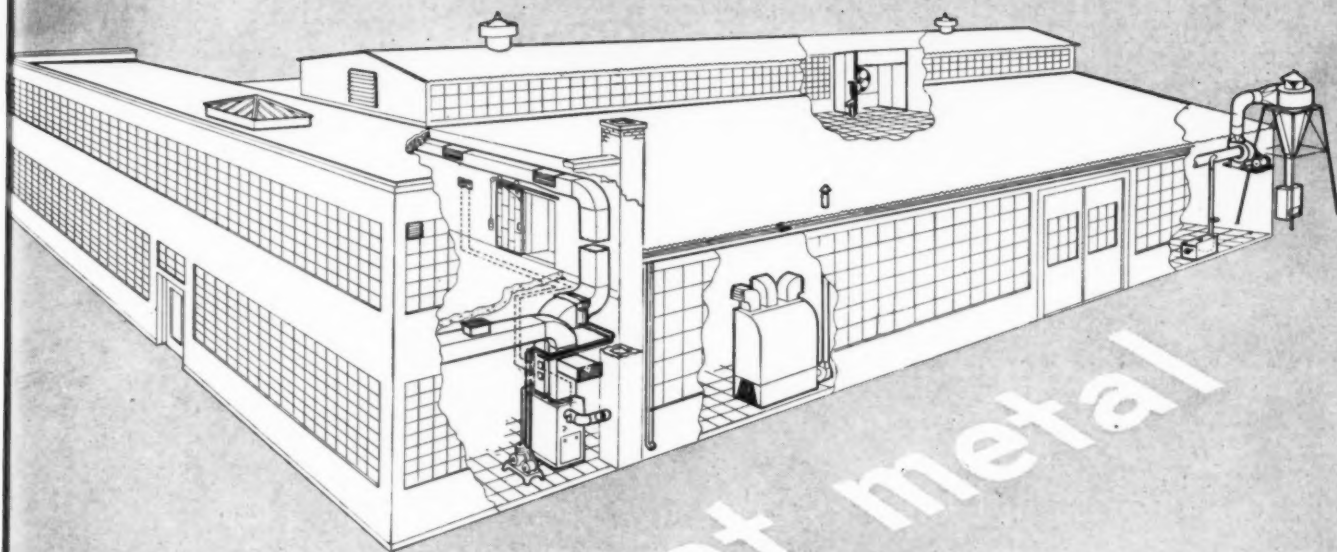
Attic installations using motors ⅓ HP. and above should be fed by a separate circuit from the main service entrance panel. The contractor should provide a fused disconnect switch in the hall or other easily accessible location.

The Underwriters Laboratory Inspection Service requires that automatic means be provided for cutting off fan and closing ceiling opening in the event of fire. A fusible fuse link set to open at 135° F. is recommended for this purpose and is installed in the air stream preferably on the suction side of the fan so as to operate a cut-off switch in series with fan motor. Where the installation includes a flap or trap door, the fuse releases it and closes the ceiling opening. If automatic shutters are used, they close of their own accord as soon as fan stops.

All wiring should conform to the rules of the local Inspectors Bureau having jurisdiction.

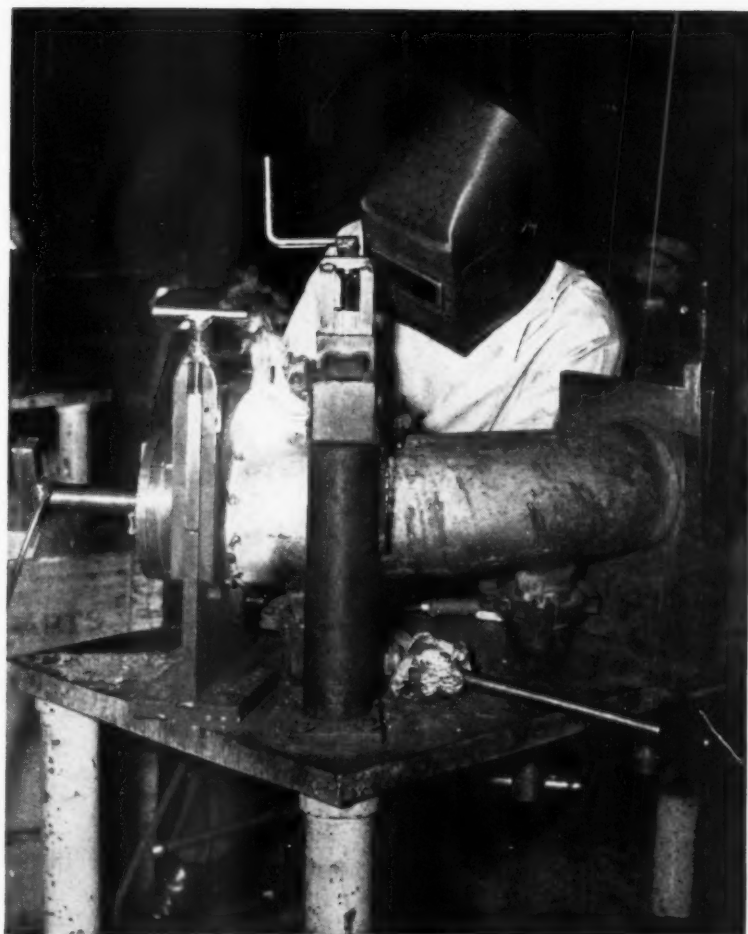
As an additional precaution, fan motors may be equipped with automatic thermal cut-outs which prevent overheating of the motor from any cause and thereby eliminate the motor as a fire hazard, as well

(Continued on Page 142)



sheet metal *Section*

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MODERN INDUSTRY DEPENDS ON EXHAUST SYSTEMS

By William P. Brotherton

Ryan Aeronautical Company, San Diego, California

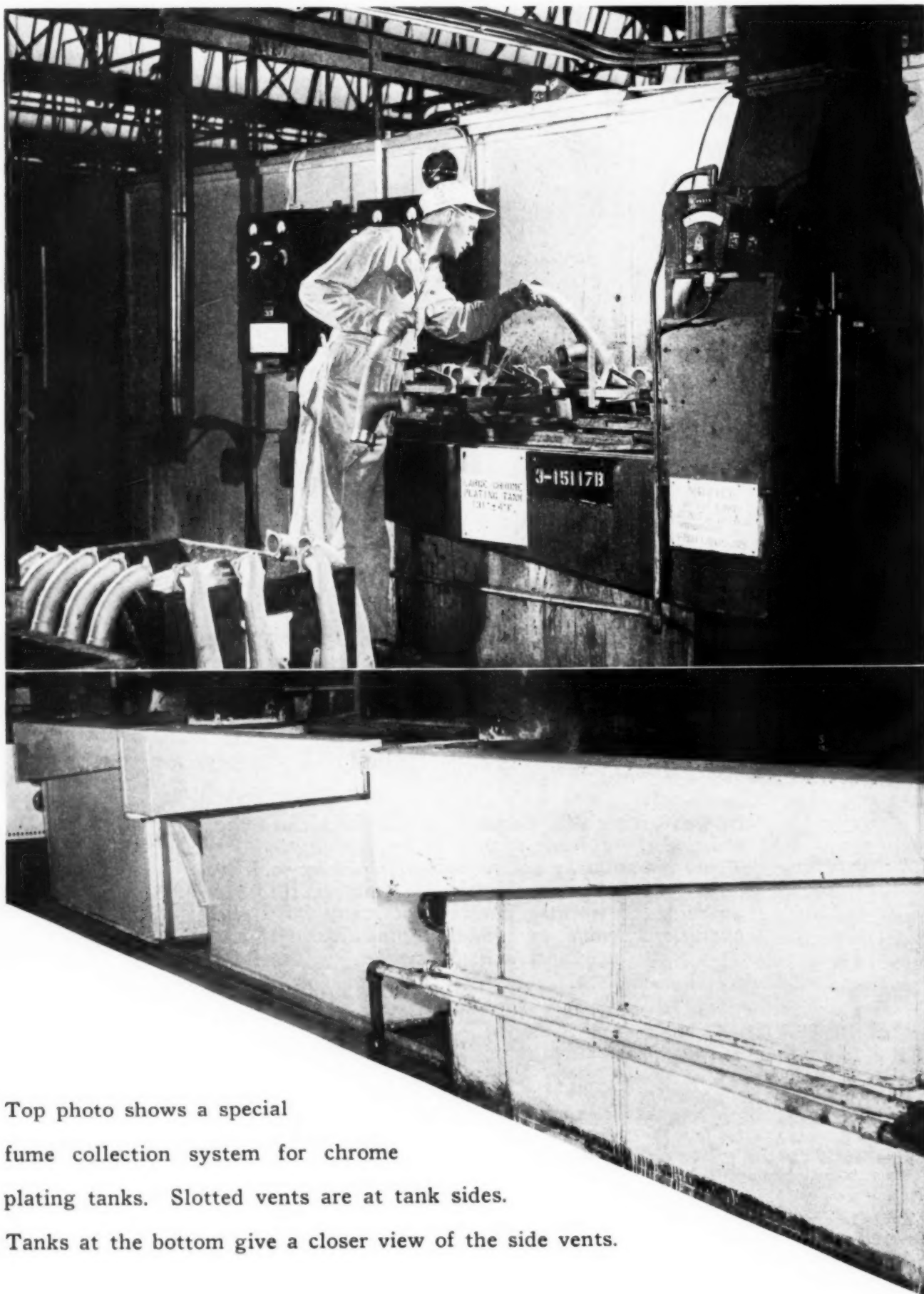
In this article Mr. Brotherton discusses the importance of the exhaust system in present day industry. There are so many things accomplished by such systems today—from reclamation of materials to safeguarding of workers health that many large scale operations would be rendered profitless without a proper exhaust system.

MODERN factories consume huge quantities of air. Like a living organism, an industrial plant breathes in volumes of clean air and exhales it as contaminated, dirt-laden gases. The network of metal ducts which collect and remove these fumes, vapors, dusts and gases is referred to as the "exhaust system." These unseen arteries perform a vitally important function in maintaining the health and safety of the plant.

Not to be confused with a ventilating system, which has to do with general atmospheric control, the exhaust system is usually a low pressure pneumatic system for conveying undesirable industrial by-products. The conveying fluid is air in which are suspended solids,

vapors and gaseous materials to be disposed. These contaminating substances are created by a wide variety of factory processes and the exhaust systems designed to get rid of them have become amazingly versatile.

Arc welding, for instance, frequently produces undesirable fumes which should be promptly removed. Metal pickling vats and acid baths for cleaning and electroplating are offenders in this regard. Spray painting must be conducted in carefully designed areas to eliminate both health and fire hazards. Smoke and fumes usually accompany the use of enameling ovens and heat treating applications. Deadly vapors are generated by many degreasing operations and hot salt baths often contribute their share of corrosive fumes.



Top photo shows a special fume collection system for chrome plating tanks. Slotted vents are at tank sides. Tanks at the bottom give a closer view of the side vents.

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A few of the applications involving the necessary removal of dusts are found in woodworking industries where sawdust and shavings accumulate from sawing and sanding; objectionable granite dust found in stone and marble plants and particularly noxious are abrasive dusts from grinding and polishing departments because of their harmful effect upon the lungs.

Importance of Design

From this partial list of undesirable by-products of factory operations it can readily be seen that careful study must be given to the design of the exhaust system to meet any particular problem. An exhaust system is entirely dependent upon a sufficient volume of air flowing into the exhaust inlets to catch the matter to be exhausted before it has an opportunity to diffuse into the general atmosphere of the room. The velocity of air through the system must be sufficient to convey the entrained matter without allowing it to settle out in the piping system. This velocity is not usually less than 1000 feet per minute and may run as high as 12,000 feet per minute in extreme cases where heavy particles, such as lead dust, are conveyed.

At the Ryan Aeronautical Company plant, the exhaust system needs are rather unusual because of the flexibility of production lines. Ryan has developed a method of manufacturing called "flow production" which is somewhat similar to a composite of those used by the garment and auto industries. Under this system many different products are fabricated and assembled in one assembly line by releasing "blocks" of parts through "control points." This is an extremely flexible set-up in which similar types of machines are not grouped in one department but each machine is placed in the assembly lines where it will intersect the parts most efficiently. When changes in design and production occur, a study is performed to determine the processes required and the machines are switched around in order to get a line which involves the least movement of parts. At times, entire departments have been moved from one end of the 43-acre plant to the other over a week-end.

Flexibility of Equipment Stressed

Because of this need for mobility of machines, the exhaust equipment at Ryan is largely made up of individual systems which serve each machine or process. These units involve short runs of piping directly to the roof and can be quickly moved with the machines when necessary. All of the exhaust systems are forced air types. Most of them employ 3 horsepower electric motor-driven blowers which are installed in the main exhaust pipes because of the more effective results attained in this location. For instance, with the blower installed in the main exhaust pipe of a typical acid tank system, it is possible to do a good job of fume removal with a duct velocity of 2,000 feet per minute and a duct diameter of 20 inches. If this blower is installed outside the main duct and the air from it is fed into the system in a "siphon system" arrangement, a much greater velocity of air is required. For this same application, a velocity of 8,000-10,000 feet per minute would be needed and the main exhaust duct would have to be around 40 inches in diameter.

At Ryan, there has been no material depreciation of blowers due to the action of fumes and vapors because of this practice. Of course, every step is taken to see that the proper materials are used for each application. Stainless steel is used to fabricate the exhaust systems used with particularly corrosive acid tanks. Generally, galvanized sheet and black iron are the duct materials employed. The ducts are painted inside and out with acid-resisting paint such as Nukem Numastic and Ajax acid-resisting paint. These paints will provide satisfactory protection from the effects of moderate hydrochloric, sulphuric and nitric acid vapors.

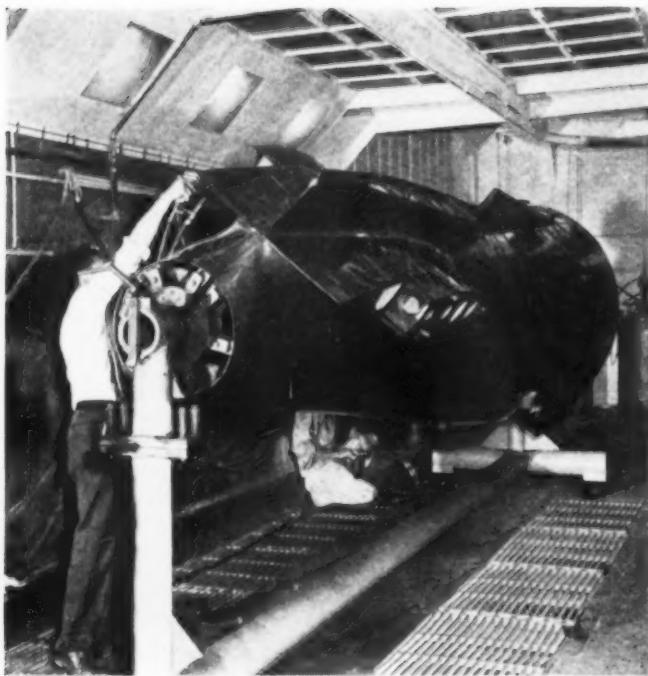
Some Applications

Typical exhaust system applications found in the Ryan Aeronautical Company plant are those involving nitric and hydrofluoric acid fumes from pickling and passivating tanks. Chromic acid fumes are removed from chrome plating vats and lead fumes from foundry furnaces. All of the Ryan spray painting is performed in water-fall paint booths which direct the paint fumes into a circulating waterfall that absorbs them. Poisonous trichlorethylene fumes rising from degreasing tanks are condensed and dropped back into the tanks by cold water circulating at the tank tops. Other sources of noxious vapors, which must be disposed of, are found in the battery charging areas and anodizing tanks.

Since a considerable number of sources of detrimental fumes are open acid and caustic tanks, the Plant Engineering Department at Ryan has developed an effective method of venting these particular offenders. Most of these open tanks are 3 feet wide and 6 feet long. Employees must work above them in order to place and remove parts to be treated. If hoods were employed to collect the fumes which are given off, they would have to be several feet above the surface of the fluids and the fumes would be drawn past the operator. Also, it is impossible to control fumes from hoods placed in such a manner even with high velocities of air.

Ryan engineers used a slotted vent which extends just above the surface of the tank to capture the fumes generated. These slots are from 1 inch to 1½ inches wide and extend along the length of the tank on both sides. They empty into closed channels along the sides of the tank which feed the fumes into the main exhaust duct containing the blower. By making these slots adjustable and tapering the channels, it is possible to get balanced and uniform flow at all points on the surface of the tank. The system is designed to produce a velocity of 2,000 to 3,000 feet per minute in the slots and 2,000 feet per minute in the ducts. For tanks which are not more than 3 feet wide, the volume of air in cubic feet per minute to be handled is determined roughly by multiplying the area of the tank by 200. Overall friction losses are kept down to 1 inch of water.

These slotted vents allow the dangerous fumes to rise only a few inches above the surface of the liquid before the strong suction, and downdraft created over the center of the tank, deflects them to the tank sides. Another advantage of this method is that it works



On the left is a paint spray booth that has heated air blown thru vents in the ceiling with the air then drawn thru floor vents by means of suction. Shown at the right is a very effective waterfall paint spray booth.

equally well with fumes which are lighter or heavier than air. In the cases where such fumes might collect at the floor level, as in die-grinding booths, it is feasible to locate the slots at the lowest point near the floor.

Sandblasting Presents Problems

A goodly amount of sandblasting is performed at Ryan to clean the surface of stainless steel. In the large sandblasting booths, the operator dons a complete respirator, enters the booth and directs the blast of sand as needed. Smaller booths are located throughout the plant which allow the operator to insert his hands through special sealed openings to handle the parts and perform the sandblasting. In these facilities, the air borne sand is sucked up directly through a duct which passes through a filter bag. Most of the solid material is removed here and the fine sand is carried up through the roof under forced air pressure.

A notable exception to the practice of using individual exhaust system at Ryan for processes is found in the wood-working department. Here, wood and masonite are cut and sanded for patterns. All of the sanding machines, saws, routers and lathes are fitted with hoods which remove the chips and sawdust through an integrated system to separators. The sawdust captured is used by maintenance employees for floor sweepings.

These hoods are located as close to the source of dust and chips as possible because of the inability of suction hoods to capture flying particles even a short distance away. However, sufficient air must be allowed to enter the hood to transmit the material and it should be located so that air stream will pass through the

dust generating zone in the direction of chip travel. Flanges surrounding the hood opening increase the effectiveness of the hood by forcing the air to flow from the zone directly in front of the hood and reducing the flow from ineffective regions. The flange width should be such that it intercepts the 5% contour line of the unflanged hood if possible.

A good way to determine necessary hood face velocities for a particular application is by means of a test hood which is connected with a suction source and checked in at various locations in the dusty, or fume-laden, zone. Average face velocities of from 500 to 1000 f.p.m. are usually sufficient for hoods enclosing dust sources.

Location of Hoods

Hoods should be located as close as possible to the dust source because of the very restricted area influenced by suction openings. For instance, assume that a dust particle flying in space requires an air velocity of 1000 f.p.m. to deflect it into the hood, and that the face velocity of the hood mouth is 4,000 f.p.m. Then assume the hood duct is 6 inches in diameter. At a distance of only one diameter, or 6 inches from the hood mouth, the velocity will be only 7% of 4,000 f.p.m. or 280 f.p.m. This is insufficient to capture the particle and it will be found necessary to approach within 3 inches of the particle in order to deflect it into the hood.

Hoods employed to remove vapors, gases and fumes are designed to localize the gases and trap them before they spread. They should be shallow in pitch and, for gravity operation, the exhaust duct should have 1/15 the cross-sectional area of the base of the hood.

(Continued on Page 144)

Pneumatic Tools—

For the Sheet Metal Shop

By
Ernest E. Zideck
Sheet Metal Consulting Engineer

WE are inaugurating this series of articles on sheet metal tools and their comparative performances with a discussion of the pneumatic tool because this tool differs from the power shear or brake or other power apparatus that might be in the shop in that it calls for the installation of an air compressor and of air lines; the first for production of the power with which to drive the tool; and the second for delivery of that power to the tool itself. Once we dispose of the subject of power derivation, we then can proceed to take one tool after another and see what it does and how it does it, and if we come across a pneumatic tool in the discussions and comparisons, we shall then treat it with the understanding that the reader has been appraised of the necessity of having the air-compressing medium and the air-delivering medium at his service prior to his considering the tool at all.

Installation Discussed

Thus, in this article, we are showing by drawings and explaining by text, the installation of a plant that would deliver the power for a pneumatic tool drive. We are not dealing here with a specific type or make of a compressor, of which there is a variety to choose from, according to the shop's needs. There are compressors driven by electric current; others are driven by steam; and some may be driven by gas or a Diesel engine. Some produce not more than 1 H.P.; and others compress air to 3000 H.P. Some are mounted upon the air storage tank in a horizontal position, and others are separate from the tank and require a concrete base for their mounting. The selection of the

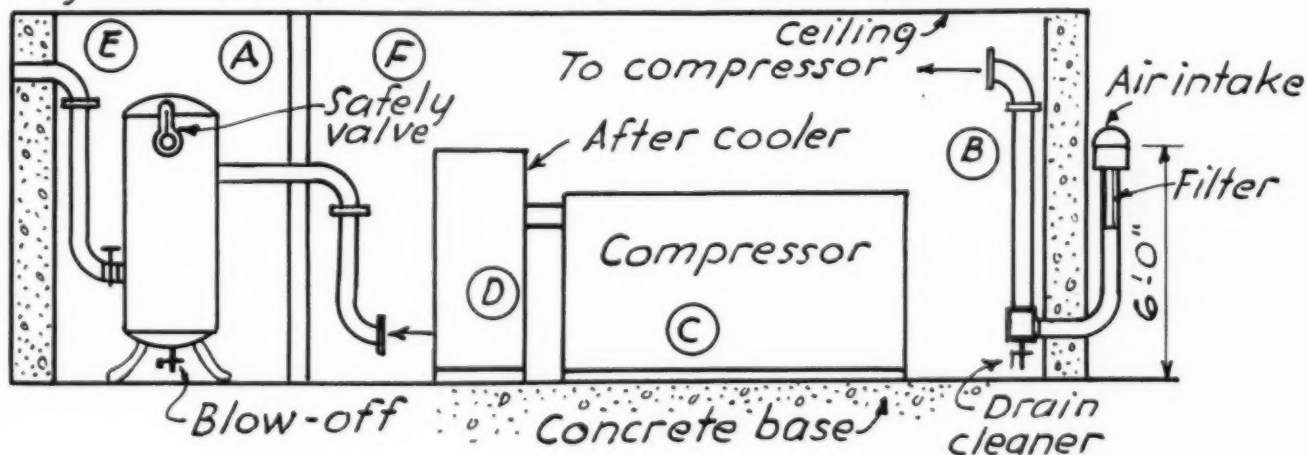
suitable compressor and tank will be governed by shop requirements, and with the above particulars and as relative to air compressors we need not concern ourselves here, except as follows:

Any compression of air will result in the air being heated, and when the heated air leaves the compressor it cools and water is precipitated. However, this water should not be in the air-storage tank, nor in the pipes feeding air to the pneumatic tools; and therefore "coolers" are provided either in the compressor itself or accessory to it, which cause the heated air to shed its water content before it is admitted into the storage tank because its presence there would cause its mixing with the dry air coming from the compressor. Even at that there still will be water precipitated in the tank, and to eliminate it a blow-off valve is installed in the bottom of the tank, which discharges the accumulated water periodically. In Fig. 1, is shown the air-storage tank in a separate room, away from the heat generated by the compressor, to allow the tank to remain cool and facilitate water condensation which may be blown off before the air enters the piping system to the tools. And even though "coolers" have been provided in the compressor itself, or accessory to it, and the tank has been placed in a cool room to induce water condensation, there still will be moisture in the air entering the pipe lines, and to prevent its contact with the mechanism of the tool, piping should be arranged as illustrated in Fig. 2 to 6.

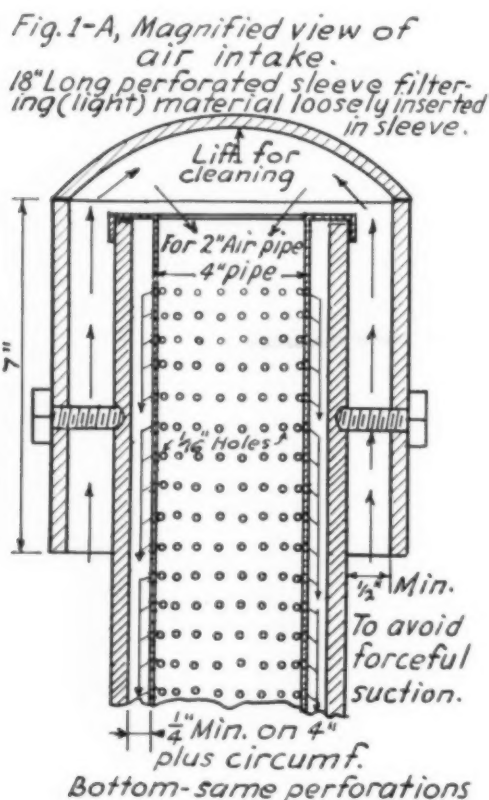
Drawings Explained

Commencing with the Fig. 1, of the drawings, we

Fig.1 Air-intake and main line from tank



see the separate (cool) room containing the storage tank as of (A), with the main lead pipe elbowing upward to about 30 inches below the ceiling before it enters the shop through the intervening wall as at (E). This main lead (which will be further treated under Fig. 2), should have no obstacles on its interior, such as would result from threading together pipes and fittings, obstructing the air flow and forming "pockets" between the pipe ends to allow the water to form into pools. Elbows and connections should be of the large radius variety, connected by means of flanges and bolts. In the room (F) is shown the compressor (C) and an eventual "cooler" (D), with connections as of (B), from the air-intake, which is located on the outside of the building. This air-intake (Fig. 1-A) is very important for proper functioning of the system. The air must be filtered on its entry into



the intake, and the filter should be easily detachable for cleaning, which is best accomplished by locating it in a smaller diameter pipe fitting into the intake pipe, that will slide upward for adjustments of the filtering material. This intake pipe should be double the size of the opening into the compressor, because the filter will cut down the amount of air admitted through it. The air-intake head is a sleeve (capped), held to the pipe by setscrews, the sleeve of a diameter to admit plenty of air to flow between sleeve and pipe for entry into the filter tube.

Placement of Intake

As shown in the drawing the air-intake is positioned 6 feet above the ground, removed from the effects of rain and the moisture inherent in the ground and evaporating from it. Obviously the intake can be

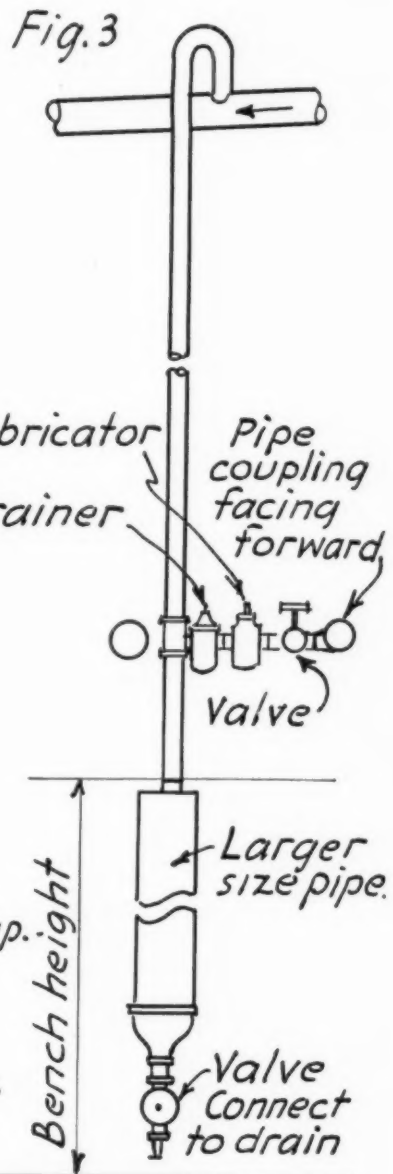
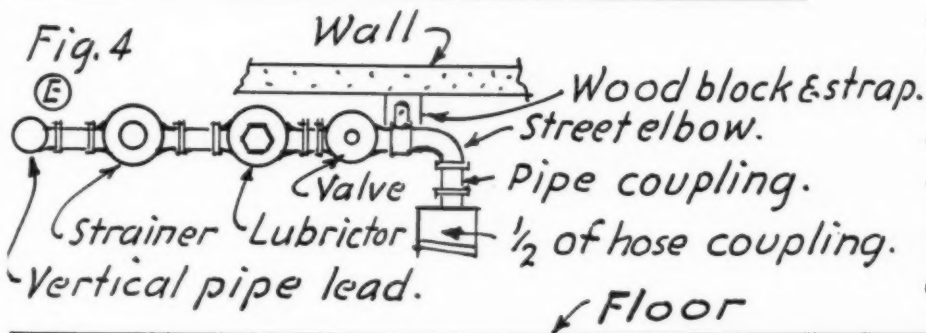
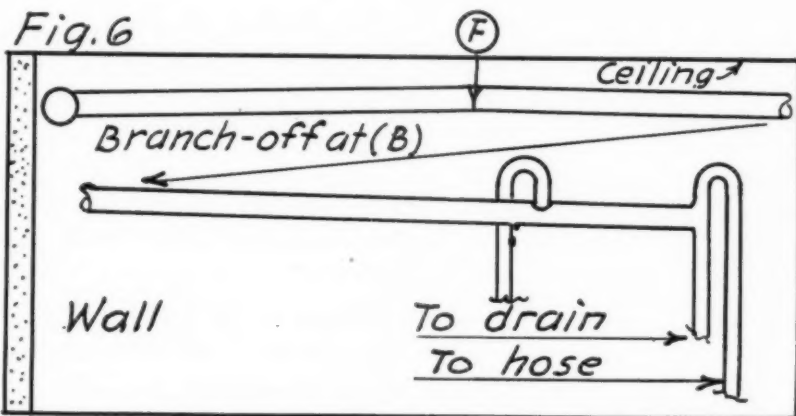
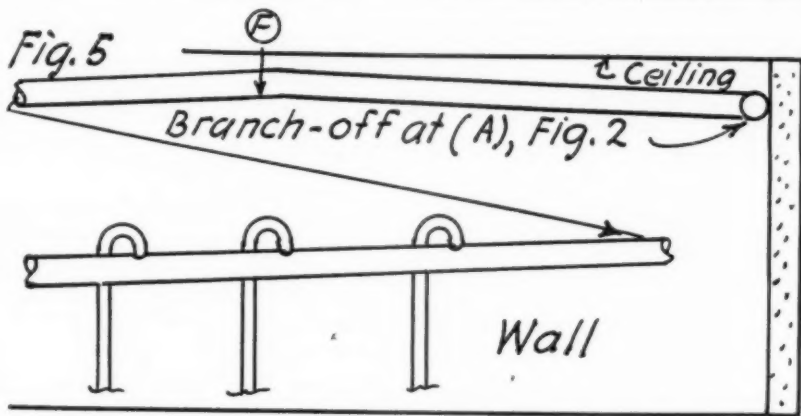
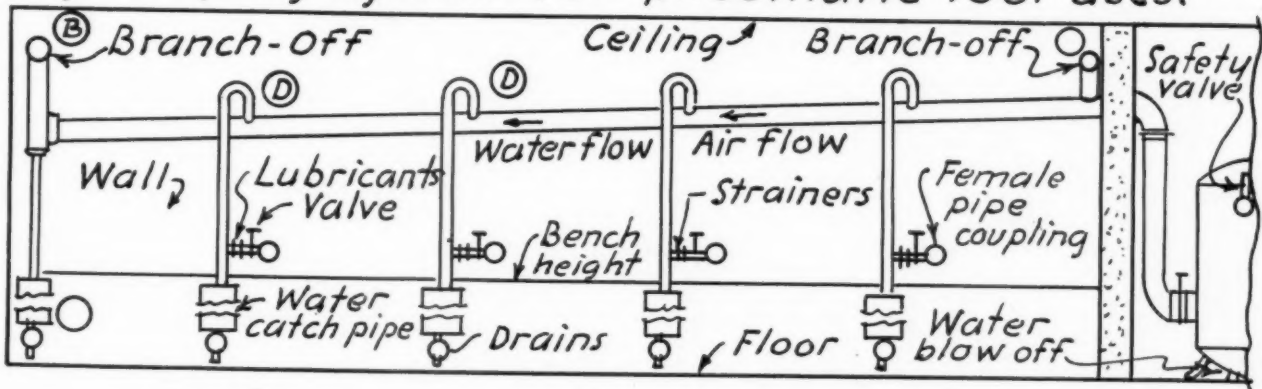
positioned *higher* than shown; but for purposes of cleaning the filter without having to bring a ladder along, the 6 foot height would be preferred. The intake pipe being double the size of the air-compressor intake, we can use a "tee" at the bottom of the vertical lead, there remaining ample air-flow even with this obstacle in its way. The large size tee we plug so that we can un-thread the plug for removal of dirt that will gather in the tee (the filter notwithstanding). Into this plug we insert a small drain cock, so that we can open it for eventual water drip-off. The intake pipe leads upward to about 30 inches below the ceiling, where it turns inward into the room on a wide elbow provided with connecting flange. The compressor installer will take air from this point on, leading it to wherever the opening into the compressor is located. The practice of burying the elbowing intake pipe into the concrete (or the ground) should be avoided, as there always will be some dirt and water coming down the pipe and if the lead is buried it cannot be cleaned or drained.

Contemplating the drawing, Fig. 2, we see the same size pipe as leads from the air-storage tank, extending throughout the length of the shop. The same size is maintained throughout because, if it were to be reduced the reducer or bushing would form a "pocket" in the lead, holding water which the forceful stream of air through the pipe would carry along to the tool. This main air-supply line should be either welded together or connected by flanges to prevent formation of pockets. The lead is on a *slope* to admit of water flowing to its end, as at (C), where it drains to the floor or, into a small size pipe connecting all drains shown, leading to the outside of the shop. At (A) and at (B) in Fig. 2, we see upward pointing branch pipes, the nipples (which may be of smaller size than is the main lead because their upward position would form no pockets), welded to the main pipe, same as the leads (D-D) are, connecting to the hose and the tool. These leads (D) start out upward from the main pipe and elbow back, as shown.

Reason for Slope

This arrangement prevents any water contained in the main pipe entering the downward leads and the tools, eventually. The elbowing should be on a larger radius, as shown, to admit of free air-flow through the pipes; obviously the elbowing should not consist of threaded fittings because they would cut down the amount of air desired in the lead, and obstruct its flow. These down-leads should be one-inch capacity pipes, for reasons disclosed farther on. The down-lead is illustrated in Fig. 3, and inasmuch as the main pipe is close to the wall removing the (D) from it, woodlocks should be underlaid by which to secure these pipes to the wall. At about one foot above the eventual bench top there is a tree inserted, at this point not cutting down the air flow or forming pockets for water. From here on the down-lead (to the underside of the eventual bench) can be reduced to a smaller size, connecting to a pipe about 2 inches in diameter, serving here for holding water coming down through the lead. A small valve below admits of draining the

Fig.2 Piping system for pneumatic tool uses.



water from this larger pipe, as discussed above in respect to the draining of water from the main line at its terminus, (C). In Fig. 4, is shown more clearly the branching off pipe connecting to the hose coupling and by the hose to the tool, as at (E). This branch-off should continue in the one inch capacity pipe, although in cases where we are sure of not needing the one inch capacity air pressure (and if we want to save on the sizes of Strainer, the Lubricator, the Valve and the Hose Coupling) we can reduce this lead to $\frac{3}{4}$ or $\frac{1}{2}$ inch capacities. In Fig. 4, we see first, a strainer inserted in the pipe for the air to pass through. These strainers, as well as lubricators, valves and hose couplings are standard obtained from manufacturers.

Lubrication Needed

The lubricator is inserted into the line because, although many pneumatic tools are being built with lubrication provided in them, many are not, and it is better to be sure that there will be no tool used without receiving lubrication, and if it is supplied by the line, so much the better. The valve shown in the line is provided for purposes of interchanging tools by means of the hose coupling. At times it is necessary to use a small drill requiring only $\frac{1}{4}$ inch capacity at the place where a 1 inch drill had been used requiring the full load of air coming through the lead. And because this $\frac{1}{4}$ inch drill need not be attached to a 1 inch capacity heavy and unyieldly hose, the air is shut off by the valve shown in Fig. 3 and 4, and a small size air hose connected by means of the coupling. We can use a street elbow here because it threads over the valve nipple and into the pipe coupling which then receives the "male" end of a hose coupling. If we want to "hook-on" a smaller size hose coupling than the one inch pipe coupling provides for, we use a "bell" bushing as shown at the base of the large pipe in Fig. 3. These pipe branches (E) should be securely fastened to the wall, by underlaying wood blocks as shown in Fig. 4. It is best to point these pipes slightly upward before fastening, so that there is a slope towards the water drain.

Distribution System

In Figures 5, and 6, are shown the branches (A-B) taken from the main supply line for bringing air across the shop or to an eventual paint spraying booth or enameling room. It may be seen in the drawings that the branching off pipes are *sloping* down either to the main line or, at their far ends, towards their own "drains" similar to the one as at (C) in Fig. 2. This sloping down of the leads is a necessity, as in a straight line or one in which there would be "pockets" water would remain standing, mixing with the air flowing to the tools. If we must have leads running across the shop suspended from the ceiling, this slope must be maintained (and a rather more pronounced one) because a suspended pipe is liable to bend in-between the upholding straps or hooks, forming pockets. It will be necessary to bend the pipe at points (F-F) in Fig. 5, 6, or weld it, providing for the slopes. This piping system (same as the air-intake in Fig. 1), is very consequential, practically determining the performance and the remaining in good working order of

the air-driven tool; and it should be treated in that spirit. The pneumatic tool requires three essentials for its full performance and remaining in good working condition. These are: (1), *clean* air; (2), *dry* air; and, (3), *plenty* of air. Thus, if we clean the air well at the intake, Fig. 1; and provide throughout the system for adequate separation of water from air so that moisture cannot reach the tool, we have installed the system correctly. And if we bring to the hose connecting to the tool twice as much air as the tool requires, we can be sure of its capacity performance, full speed and shorter time for the work at hand.

Figuring Capacity

Air capacities required for this or that shop can be calculated on the basis of air load at the tool, the number of tools used at the same time, and the frequency of the largest air-load utilization. So, for instance, many tools operate at $\frac{3}{16}$ and $\frac{1}{4}$ inch dia. air-intake *at the tool*. For good performance and full speed at all times we should bring the air to the tool in double the amount using at least the $\frac{1}{4}$ inch capacity hose for the $\frac{3}{16}$ inch tool, and $\frac{5}{16}$ inch hose for the $\frac{1}{4}$ inch intake. Granting that we use 10 tools of the $\frac{1}{4}$ inch and $\frac{5}{16}$ inch hose connections, the 1 inch pipe at any one of the (E) branches would supply air for *all*. But if we drill a 1 inch dia. hole in iron or steel we would need the whole contents of the (E) branch for that one tool, leaving nothing for other tools. That is why the main line coming in from the tank should be of ample size to supply air to branch lines and to (D) lines, or at least enough for operation at one and the same time of three of the heavy drills (their equivalent in air-consumption) and 10 of the smaller tools, which altogether would call for a main line (from the tank) of 2 inches inside diameter. The compressor should be selected accordingly, and there should be provisions for an average 90 lbs. pressure *at the tool*, to insure its full speed and efficient operation. Inasmuch as the large tool (as a 1 inch drill hole) calls for the contents of the one inch pipe for efficient work, it will be seen why the "D" leads should be maintained that size. There would be no prudence in a piping installation which would not permit using the heavy tool at *any one* of the "D" and (E) hook-ups.

Advantages of Air Tools

When we consider that a hoist lifting 700 lbs. needs only $\frac{1}{2}$ inch capacity hose; and that the hoist lifting 20,000 lbs. will operate satisfactorily by a $\frac{3}{4}$ inch hose connection; we see that we need no great size of air connecting means unless the tool operates at an immense speed, such as the one inch dia. drill would, in which case it is better to provide a one inch dia. connection to it. It is this great speed of the pneumatic tool which is its one outstanding advantage. There is more power in the $\frac{1}{4}$ inch hose supplying air than there is in an electric motor built for drilling $\frac{3}{4}$ inch holes in steel. In addition to the great power and speed inherent in the air-driven tool there is also the additional advantage of the light weight of the tool. The shop equipped for pneumatic tool use will benefit in that tools are provided for air-drive which would be

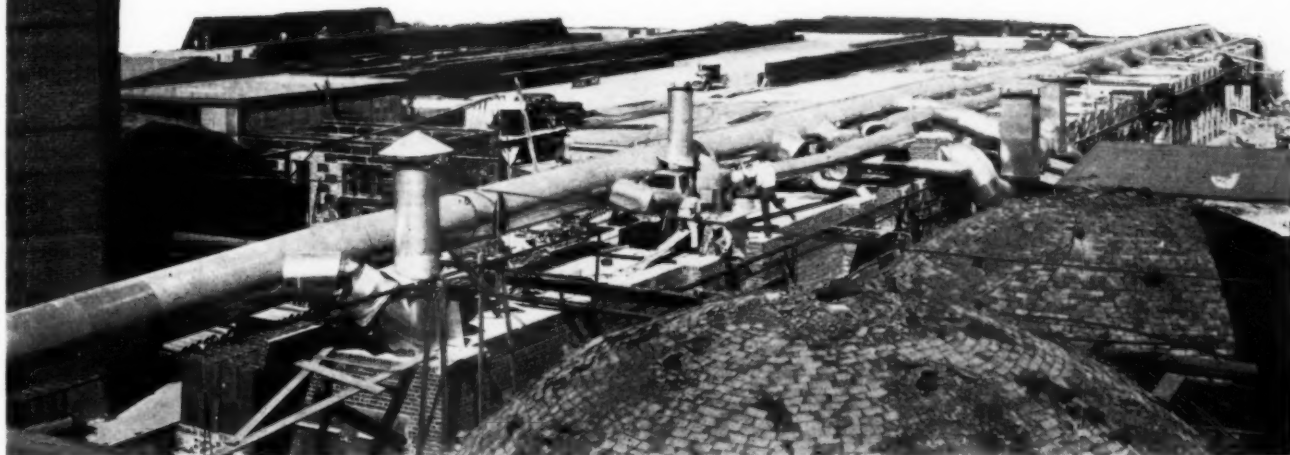
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Aluminum In Large Pipes For a Clay Pipe Drying System



Overall view of the piping system showing the 42-inch mains of 24-ST and smaller pipes of 2S and 3S aluminum. Aluminum was also used for fan stacks and hoods, kiln stacks, and all fittings.

PACIFIC CLAY PRODUCTS decided in 1945 to build a tunnel drying kiln for their clay pipe at their Los Angeles plant. The plans and specifications were prepared by Allied Engineering Co. in cooperation with Clark Sutherland, Assistant to the President of Pacific Clay Products, and Meredith Hawk, Engineer.

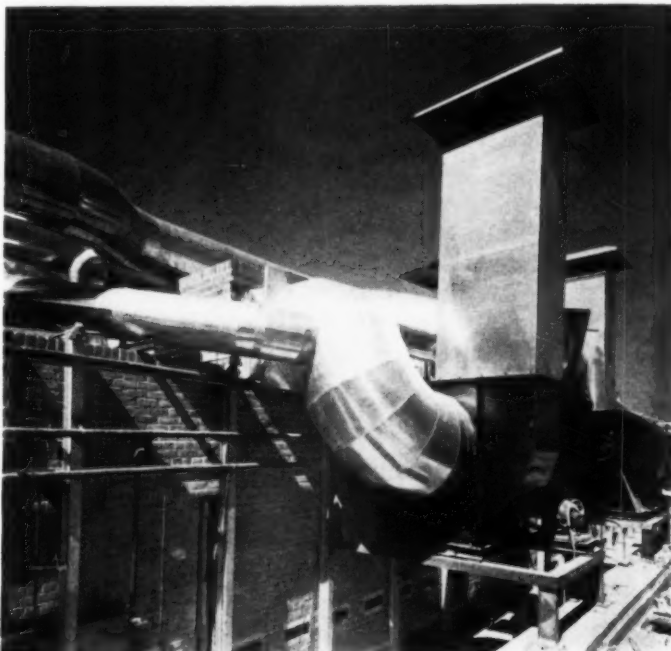
Work was begun on the kiln in March, 1946, and progressed rapidly despite difficulties in obtaining materials to the point where it was ready for the installation of the recirculating duct work. Several sheet metal firms were interested in the contract, but the shortage of galvanized iron deterred most of them from bidding; however, one firm National Cornice Works of Los Angeles, headed by W. H. C. Ness, sought to find an alternate material. This was made more difficult by the fact that the recirculated air reached a sustained temperature of 450° and more.

Use Surplus Aluminum

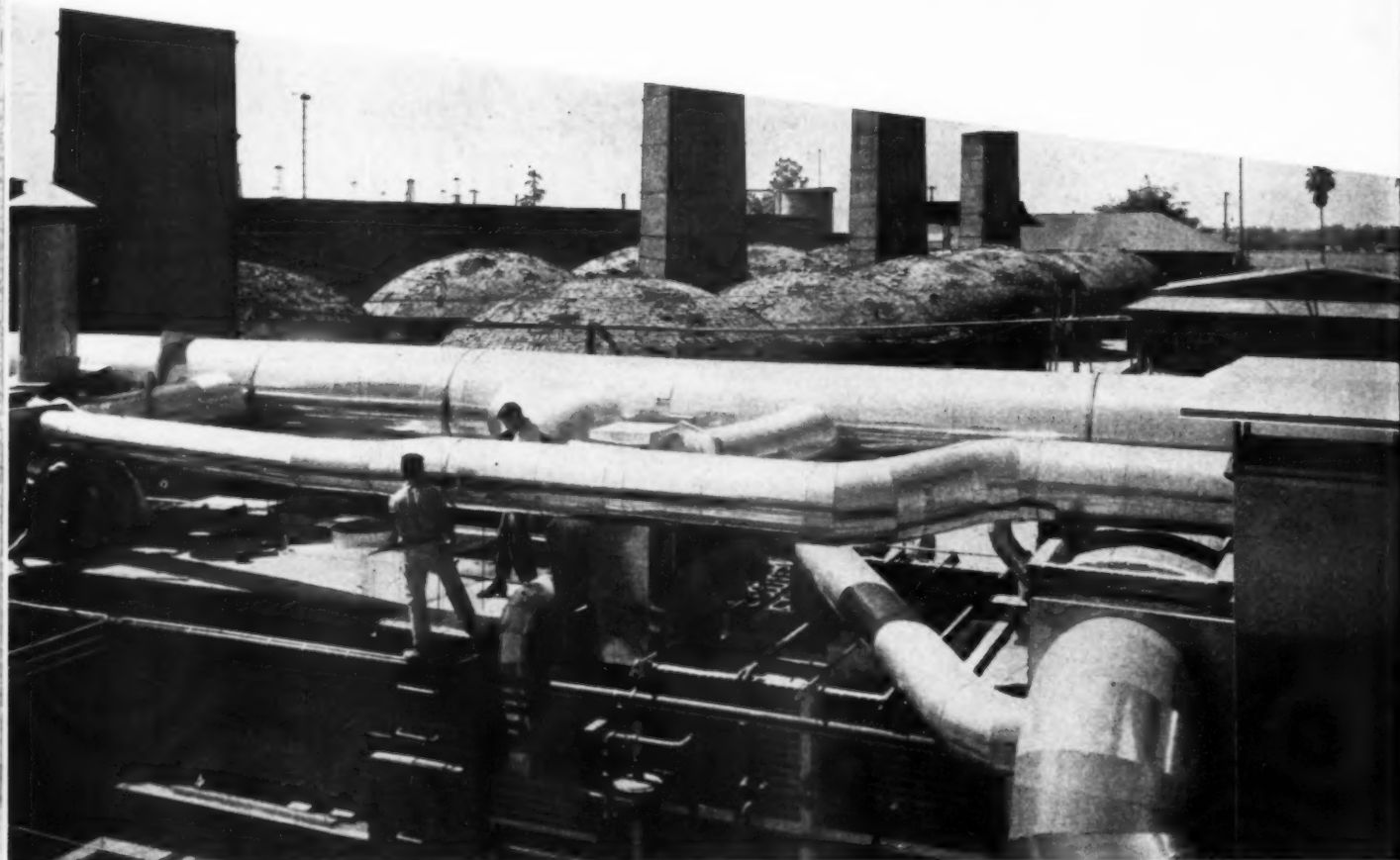
The firm decided to investigate the possibility of aluminum and submitted the problem to an aluminum producer, who after investigating, informed the firm that there were some aluminum alloys available through War Surplus that were suitable for this condition, namely 2-S, 3-S, 24-ST, 52-S, 61-S. It was decided to submit a proposal using .051 thickness sheets in lieu of 20 or 22 galvanized steel and .064 in lieu of 16 galvanized steel to provide an additional safety factor. This proposal was submitted to Mr. Sutherland and, after due checking, was accepted by him as satisfactory. Work was started and proceeded rapidly.

The pictures shown were made about sixty days after receipt of the work order.

The National Cornice Works found that the 24-ST alloy, owing to its rigidity, was best for the trunk lines which are as large as 42 inches in diameter, and the



Aluminum of .064 gauge was used for fan stacks following standard practices for flanges, riveted seams and connections, while .051 and .064 in 2S and 3S was used for small pipes, fittings, etc.



All joints—in fittings and straight sections—were riveted using aluminum rivets with approximately 2¼-inch spacing. The workmen are supporting the pipes with ½-inch round rods on draw bands until such time as the building is erected when the pipes will be suspended. Sections and fittings were made in pieces and sizes identical with steel construction.

other softer alloys were used for the tees, elbows, etc. All joints were riveted with aluminum rivets approximately 2¼ inches on center. It was interesting to note that the sheet metal workers employed on the job were pleased with the workability of the aluminum and the ease, owing to its light weight, with which it could be lifted in place in much larger sections than could have been employed had steel been used.

Another feature of the job was that because of the steel shortage, the building to house the kiln would not be ready until the kiln had been in operation for some time. This necessitated supporting the ducts instead of hanging them. This was accomplished by using a two piece draw band supported on each side

by a ½-inch round rod which had a "foot" on the bottom.

This system is mainly for the purpose of drawing off hot air from the sections of the kiln where the ware has finished baking and using this hot air to preheat the ware entering the kiln. The surplus of this hot air from the non-gaseous parts of the kiln is then carried to another section of the plant where a 48-inch axial flow booster fan discharges the air into three tunnels to dry the freshly molded ware.

The highly satisfactory results obtained in the installation have resulted in another similar installation now being made by National Cornice works for Gladding McBean & Co. of Glendale, California.

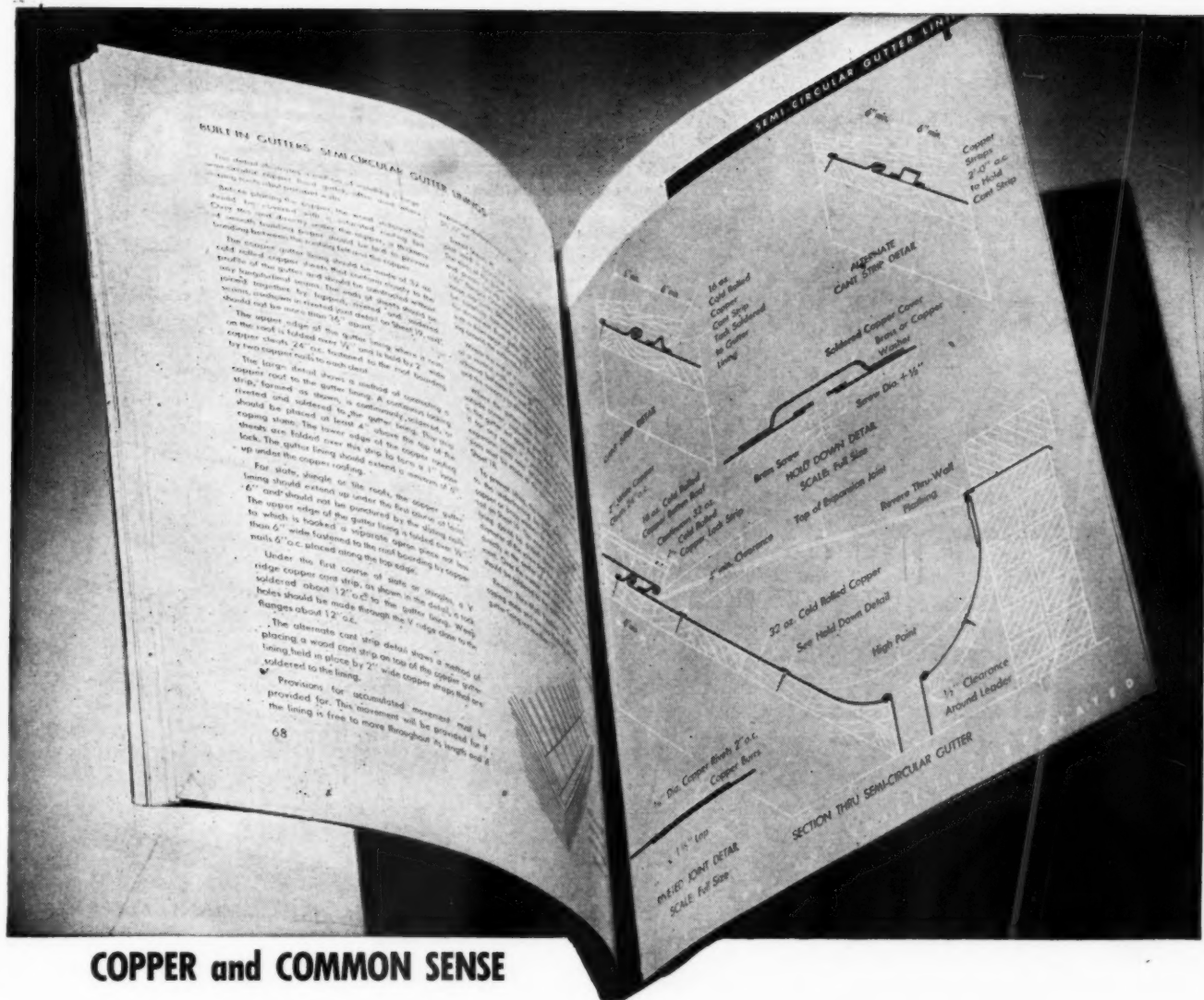
House Cost vs. Wages

AN interesting survey recently concluded in a city noted for its high building costs, shows that a house offered in 1940 at a price of \$7,685 carries in 1947 a selling price of \$14,550. The interesting point of the survey, however, is the fact that at 1947 wage rates, a plumber in that city would work 838 hours less; a painter, 2,048 hours less; a carpenter, 146 hours less; an electrician, 1,218 hours less—to pay for this house at \$14,550 than he would had to work in 1940 to buy the \$7,685 dollar counterpart.

Also there is a comparison of prices which indicate

that in this same city a butcher would have to sell 9,717 fewer pounds of beef; a grocer, 5,654 fewer dozen of eggs; to accumulate the 1947 purchase price. Much the same percentage applies to the shoe dealer or the clothing store proprietor or the department store owner.

The point to the survey is that while housing costs seem to be disproportionate, housing costs must be considered in the light of wages paid or goods sold by the purchaser of the house and the figures quoted above indicate that house prices are not out of line with wages or prices of commodities.



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QUESTION: What's the best way to install semi-circular gutter linings?

ANSWER: Detail Sheet 19, Pages 68 & 69 in "Copper and Common Sense"

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Copies of this book are now in the hands of all holders of Sweet's Architectural File, and of leading sheet metal contractors. We urge you to use this book,

to turn to it first in all matters of sheet copper construction. It covers every phase of the subject—roofing, gutters, flashing—in full detail. For any further assistance, feel free to call on the Revere Technical Advisory Service, Architectural. Revere building products are sold only through Revere Distributors.

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National Association of Sheet Metal Distributors

Spring Meeting

THE National Association of Sheet Metal Distributors resumed its schedule of Spring Meetings at Columbus, Ohio, May 26th & 27th, such meetings having been interrupted by war and war conditions. An enthusiastic membership went through two days of an idea packed program, prepared by Secretary-Treasurer Thomas A. Fernley and President Art M. Vorys.

In his opening remarks, President Vorys pointed out the need for the activity being done by the group and the benefits to all the Wholesalers of such activities. He asked that thoughts developed by the meeting be transmitted to himself and Secretary Fernley so that the Fall Meeting in Atlantic City would be even better from the point of view of improving the wholesaling of sheets, and all other equipment sold by the membership.

Secretary Fernley addressed the group and asked again for suggestions about the type of activities in which the membership thought the Association should engage. He then went on to say that he intended to limit his discussion to just two topics; the cash discount situation and the position of the distributor in the national economy.

The speaker brought out the fact that the cash discount is a premium that is given to a prompt paying account and is also an indication of credit standing since any firm not in a position to take advantage of the discount may be shaky in its financial structure. Caution was urged in the billing of items on which the manufacturer gave a discount other than 2% because it is often a source of difficulty with the customer.

Place of the distributor in the merchandising setup in this country was Mr. Fernley's next point of discussion. He emphasized the tremendous job the manufacturer would have in covering the country with salesmen if it were not for the distributor. There is also a terrific saving in wear and tear on the retailer when one salesman is able to show him scores of items rather than having scores of salesmen showing him one item.

Mr. W. P. Tracy, Pres. Tracy-Wells Company, Columbus spoke on "The Unfair Tax Advantages Enjoyed by Cooperatives", and pointed out the need for concerted action by all business men upon Congress to see that the present inequities of the income tax laws were changed or repealed. Mr. Wells pointed out that a great many co-ops were in danger of becoming monopolies and that in the state of Ohio alone there was one whose lines through stock ownership extended far beyond the concepts originally thought of as "co-op" effort. He said that every business man interested in the maintainance of the Free Enterprise system should contact his Congressman and Senators to see

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Mr. Robert J. Ritchey, Manager of the Market Development Division, Carnegie-Illinois Steel Corporation, with the aid of a very interesting movie, gave the position of his company in Market Development.

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Technical Developments

"What's Around the Corner in Science," by Dr. Bruce W. Gonser of Battelle Memorial Institute, Columbus was the next paper read. Dr. Gonser skipped over the Electronic Field, since it had already been covered by Mr. Volkenaut. Looking into the future of sheet steels Dr. Gonser said that the cost of steel sheets was at a point where developments at the mills to give greater purity of product at a competitive price would soon be apparent. Thicknesses down to 7 ten thousandths were now possible due to better materials for rolls, and improved lubrication for the mills and rolls. Dr. Gonser foresaw a possible improvement in the methods of coating galvanized sheets. The possibility of a steel sheet coated with a hot dip aluminum, through the use of fluxes was also commercially practicable, and he named one large sheet producer, who was already marketing a form of such aluminized sheets. Dr. Gonser also pointed out that the possibilities of a slight coating of tin on steel sheets as a basis for paint was likewise possible. According to some research being done it would seem that a Tin-Zinc alloy for coatings was better than either used separately. Lead as a coating must be heavy if used for common purposes in our field.

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Technical Developments

"What's Around the Corner in Science," by Dr. Bruce W. Gonser of Battelle Memorial Institute, Columbus was the next paper read. Dr. Gonser skipped over the Electronic Field, since it had already been covered by Mr. Volkenaut. Looking into the future of sheet steels Dr. Gonser said that the cost of steel sheets was at a point where developments at the mills to give greater purity of product at a competitive price would soon be apparent. Thicknesses down to 7 ten thousandths were now possible due to better materials for rolls, and improved lubrication for the mills and rolls. Dr. Gonser foresaw a possible improvement in the methods of coating galvanized sheets. The possibility of a steel sheet coated with a hot dip aluminum, through the use of fluxes was also commercially practicable, and he named one large sheet producer, who was already marketing a form of such aluminized sheets. Dr. Gonser also pointed out that the possibilities of a slight coating of tin on steel sheets as a basis for paint was likewise possible. According to some research being done it would seem that a Tin-Zinc alloy for coatings was better than either used separately. Lead as a coating must be heavy if used for common purposes in our field.

Dr. Gonser then went into the future possibilities of the metal as yet not in common use, such as Titanium which is present in vast quantities in the earth's crust. It is estimated that there is 25 times as much Titanium as there is coal in the United States, and its use is growing very fast. Zirconium, was also mentioned as being in great supply, but as yet we have not learned how to handle it. Doctor Gonser did not think that this generation would use it in any great amount. Dr. Gonser also thought that Silicon would come into more common use as a coating for some steels, but its use on sheets was not indicated because of cracking.

Use of Aluminum

Lawrence Dunn, Development Division of The Aluminum Company of America lead a discussion on the possibilities of "Aluminum Sheets and Roofing". Mr. Dunn pointed out that aluminum was not a wonder metal, but that properly engineered would do a great many things that were not being done in the metals field. Its lightness of weight and corrosion resistance were well enough known. Aluminum does corrode in its own way but such corrosion was at a very slow rate when properly used. He said that aluminum does not require painting for protection from the elements, and that its heat reflectivity was an important factor in its competitive use in heating and air conditioning systems for ducts, housings, etc., and also for roofings. From the wholesaler's point of view aluminum was easily stored, which made it an ideal metal to cut warehousing costs. It is easily unloaded and stacked in any wholesaler's warehouse. Mr. Dunn told of some common errors in the installation of aluminum and cautioned against the use of aluminum with dissimilar metals without some bitumastic bondings. In wet concrete or mortar, the corrosion rate for aluminum is accelerated. The use of aluminum sheets for wall facings in large structures was a market that as yet was scarcely tapped and Mr. Dunn told of the proposal to use aluminum for facings in the buildings for the United Nations to cut down heavy maintenance costs. The use of aluminum for coping, canopies, flashing and ridge roll was already an accomplished fact.

Dr. Herman C. Nolen, Commerce Department, Ohio State University, and Vice-President of McKesson & Robbins, with four graduate students in Marketing made a presentation on "What We Learned About Your Salesmen". Dr. Nolen started by saying that the resulting presentation was the work of one graduate student who made the study working with over 70 salesmen in the Drug Field from morning till night. He had many graphs and charts which showed that by proper planning sales efficiency climbed at a very great rate. He had many charts showing what salesmen did with their time all day long and from all of the calls established a norm applicable to most wholesale businesses. The study included sales appeals used, and their various effectiveness.

John E. Phillips, Stelwagon Manufacturing Company, Philadelphia, delivered a paper on "The Opportunities and Developments in the Warm Air Heating Field". Mr. Phillips developed his talk from the angle of the profit opportunities that the warm air heating

field offers to the wholesaler. He brought out some interesting figures on the market potential of warm air heating which included actual sales in 1941 and the current estimates of the production volume needed in the next few years for replacement and new construction.

Having demonstrated the fact that there is an assured market he then proceeded to give his listeners a few points of caution in regard to their operations. He advocated careful selection of the lines to be merchandised and also indicated that if the wholesaler expects to deal with a manufacturer whose sales policies are fair and honest said wholesaler must be meticulous about his own policies.

Mr. Phillips concluded by advocating a greater use of engineering both on the part of the wholesaler as well as the dealer. On this same theme he advised thorough schooling of the sales staff in the lines they have to handle and use of the Manuals of the National Warm Air Heating and Air Conditioning Association.

Roger Becker of Ohio Valley Hardware & Roofing Company, Evansville, Ind., spoke on the subject of adjusting the purchasing system to suit the rather uncertain times that we are experiencing. He told of the danger inherent in a sudden shift in market, using the gas situation as a good example since there was a terrific demand for gas equipment for a time and then almost overnight the demand was throttled by restrictions placed on the use of gas for heating. It is this type of thing that can break a wholesaler's heart and bankbook.

Mr. Becker told of some of the things his company is doing to keep their purchasing policy up-to-date. These include: no addition of new items; disposing of "frill" and over-priced items; greatly increasing turnover; accurate analysis of commitments; specifying shipping dates on orders and demanding shipping information from suppliers. While every individual business needs an individual solution to its own problems Mr. Becker offered these points as things which had been effective in his own company.

A. G. "Burt" Earnshaw, Earnshaw Sheet Metal Supply Co., Mansfield, Ohio told in great detail "How We Keep Our Purchasing Records". Mr. Earnshaw showed the forms used by his company and their methods of keeping inventory controls by means of a permanent inventory card record.

Alexander Thompson, Tanner & Co., Indianapolis, Ind., read a paper on "The Distributor—The Manufacturers Sales Force". The thought that Mr. Thompson brought out was that it would be more profitable for the distributor to put extra effort into his sales operation than it would be for him to attempt to get price advantages from his supplier. The advantage that he might secure might also have been given to one of his competitors and the competitor could nullify the lower cost by dropping his price at any time. As an example of the shortsightedness of haggling with the source of supply Mr. Thompson discussed the situation that prevailed in Indianapolis during the war.

Prior to the war each warehouse handling asphalt roofing products had gained some type of special price concession from the manufacturer and each was reluc-

(Continued on Page 121)



EVANS
Automatic
OIL-BURNING
WATER
HEATER

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GRAVITY
FURNACE



Two **EVANS**

*Profit Builders for the
Plumbing and Heating Trade!*

Every one of your present and potential customers wants *automatic* hot water. EVANS is *your* and *their* best answer, for you profit most when you give them a satisfying product. With EVANS they need NO GAS or ELECTRICAL connection. Low cost fuel oil means economy. A constant, generous, *automatic* supply of hot water is assured with EVANS. Three sizes: 20, 30 and 45-gallon capacities. *Write today for details.*

EVANS 70,000 B.T.U. Oil-Burning Gravity Furnace is tailor-made for the bulk of your furnace replacement and new construction work! And it is available NOW . . . EVANS production lines are rolling at a rapid pace. Finished in handsome Corsican Red baked enamel, this furnace brings to you and your customers such features as: Easy and fast installations, an unusually efficient pot-type burner with hi-lo flame, modern thermostatic controls, *automatic* draft regulator and economy in initial cost as well as operation. It's a beauty . . . in design, construction and performance as well as appearance! *Let us send you complete details.*

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EVANS engineers have developed a simple and ingenious pocket-size Heat Loss Calculator which you will find use for often in figuring heat requirements for various sizes of buildings. You're welcome to one and we hope you'll ask for a copy.

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EVANS

EVANS PRODUCTS COMPANY

Heating and Appliance Division
PLYMOUTH, MICHIGAN

ASSOCIATION ACTIVITIES



SMCNA

THE Apprentice Training Committee of the Sheet Metal Contractors' National Association recently made public the program which had been worked out with the cooperation of labor for apprentice procedure.

The highlights of this agreement follow:

- (1) An apprentice appearing at an application conference must be accompanied by the employer; there will be no "employer's agent" used for this purpose;
- (2) The age limit of 16 to 21 years is retained but the joint apprentices committee may make special exceptions for older boys, or veterans, or boys having special qualifications;
- (3) Eight thousand hours of instruction has been substituted for the 10,000 hours in the original Association program;
- (4) The period of probation is established at 60 days;
- (5) An apprentice is to be taught shop and personal safety;
- (6) An apprentice must pay dues to the union during his training—so that the boy's initiation fee is paid up by the time he becomes a journeyman;
- (7) The apprentice need not appear at every examination if the joint apprentice board agrees to accept a written report of the boy's progress from his vocational teacher and from the shop steward and from the employer;
- (8) Under the established national agreement there can be only one apprentice for every four journeymen, but the new program recommends the indenture of the apprentice to the joint apprentice committee and there can then be in any given area served by the local union one apprentice for every four mechanics. The joint apprentice board may then assign an apprentice to a shop having only one mechanic and assign fewer apprentices than the one-to-four ratio to the larger shop.
- (9) The rate of pay for an apprentice shall begin at 40 per cent of the mechanic's current wage scale and shall increase every six months, as follows: 45 per cent, 50 per cent, 55 per cent, 60 per cent, 65 per cent, 70 per cent, 80 per cent.

St. Joe Valley

ST. JOE Valley Furnace & Sheet Metal Contractors, Inc., of South Bend, Indiana, celebrated their third year of operation the first week of May, 1947.

The officers complimented the members for their endeavor to always see that the customer is satisfied.

During the last three years, the organization has made very fine progress, particularly with the type of work their men are capable of producing. They were fortunate during 1946 in having as their president, J. R. Walker, also president of the state group—the Indiana Warm Air Heating and Sheet Metal Association.

At the present time they are planning a program whereby they may better the heating irregularities in this area.

At the May meeting, Mr. Reining of Chicago talked on the highlights of the forthcoming Indoor Heating Conference, soon to be held in Chicago.

The organization has fifty-three paid members, with forty-five to fifty present at each meeting. An annual association picnic will be held June 7th at the Mishawaka, Indiana, Conservation Club. Families of all members are to bring baskets of food, to be placed altogether on one big table.

The St. Joe organization is justly proud in stating that each and every member is willing to do his share of any of the work. With this fine co-operation, the association can endeavor to give South Bend and the St. Joe Valley area sheet metal work, warm air heating, ventilating and air conditioning that will make them proud. With the increase of population in this Metropolitan area, it is necessary to plan an extensive program whereby we can step up our production and also keep the efficiency for the much needed demand of our profession.

Material has been a big factor in slowing down a good deal of the work so urgently needed, but the St. Joe Valley association contractors have done their best to comply with consumer demands and will continue to do their best, and know that there is plenty of work ahead, rough may be the road at times.

William R. Tesky, Publicity.

Institute—New York City

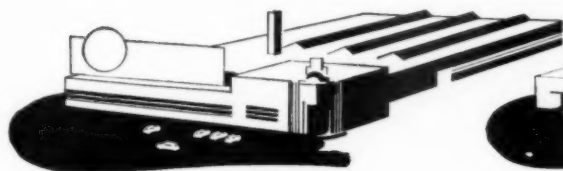
THE Roofing and Sheet Metal Crafts Institute states in the April issue of the "Institute Ticker" that they are wholeheartedly in agreement with "the efforts of the President of the United States to reverse the upward course of prices in the interest of the welfare of the nation."

The April "Institute Ticker" carries an "Application for Membership" blank, and some very good reasons why contractors should join the Institute, as well as the aims and purposes of the association. The initiation fee is \$10.00.

This group meets at 307 West Fourteenth Street, New York City, on the 2nd and 4th Wednesdays. A group meets for dinner at the Port Tavern, 108 Eighth Avenue, a little after six, before each meeting.

Angle #3

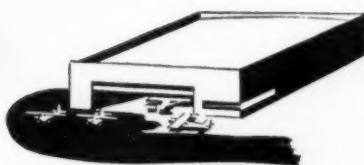
Some New Angles on INDUSTRIAL and COMMERCIAL HEATING



FACTORY

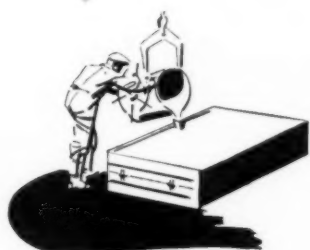


GARAGE



HANGAR

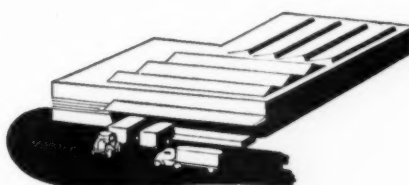
universal APPLICATION



FOUNDRY



BOWLING ALLEY



WAREHOUSE



ROLLARENA

• Whether you want to heat a small machine shop or a large warehouse or any type of open area structure, Dravo Counterflo Direct Fired Heaters are your best investment. The Dravo Heater is ideal for open space heating for two basic reasons:

First: Because of its sound engineering design it obtains highest efficiency (80 to 85%) in utilization of the fuel.

Second: It distributes heat in the most economical manner reducing roof heat losses and eliminating drafts.

These and other outstanding features, such as a stainless steel combustion chamber and ready-convertibility from gas to oil or oil to gas make the Dravo Counterflo today's outstanding open space heater.

**AVAILABLE
IMMEDIATELY**



Dravo Heaters have many additional advantages which are described more fully in Bulletin CV -516, free on request. Write or call Heating Section, Dravo Corporation, Pittsburgh 22, Pa.

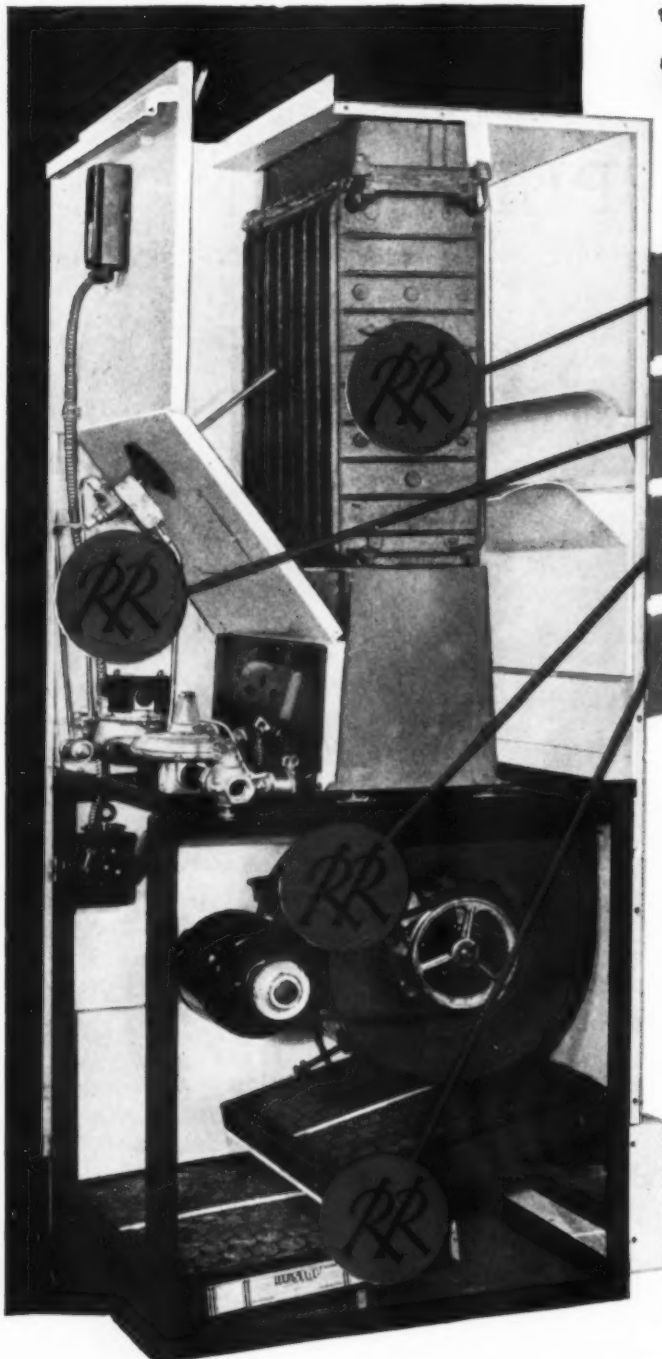
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Turn Prospects into Customers

... with new **Richmond Winter Air Conditioner**



NEW CAST-IRON-CHROME ALLOY
... heat exchanger lasts longer under
higher temperatures.

MORE EVEN PERFORMANCE
... limit control prevents unit from
overheating.

IT'S QUIETER ... blower fan floats
on rubber.

SPUN GLASS FILTER easily renewed.

It's EASIER TO SELL a prospect when you show him something he will want. That's why it's easier to sell with the new Richmond Winter Air Conditioner. A single unit in a smart Dulux white enamel finish, completely packaged, it fits in home, office or store. Heats, humidifies, circulates, filters... comes in four sizes ... occupies only about 4 to 6 square feet. Covered by *both* AGA approval and a one-year replacement guarantee. Get details from your Richmond wholesaler or write Richmond Radiator Company, 19 East 47th Street, New York 17, N. Y., for the name of your nearest distributor.

FACTORIES AT METUCHEN, N. J., MONACA, PA., NEW CASTLE, DEL., UNIONTOWN, PA. (2)



RICHMOND RADIATOR COMPANY

Affiliate Reynolds Metals Co.

Association Activities . . .

OHI

AT a meeting held in New York in March, the OHI Joint Code Committee voted to aim its first efforts at simplifying the problem the oil burning industry has in complying with the multitude of codes, standards, and ordinances with which it is burdened, by preparing a suggested revision of the Standards of the National Board of Fire Underwriters for the Installation of Oil Burning Equipments, which are printed in their Pamphlet No. 31. The opinion was expressed that this revision should reflect the views of the entire oil burning industry on what the primary regulation guiding its activities should contain. Therefore, it was proposed that a letter be prepared and that it serve as an invitation to all members of Oil-Heat Institute as well as other interested persons, to submit to the home office their comments on, and their suggestions for the improvement of, the NBFU Standards contained in Pamphlet No. 31.

No promise can be made that any changes suggested will appear in the final revision. The final form of the oil burner standards is decided upon by the Flammable Liquids Committee of the National Fire Protection Association. The oil burning industry is represented on this Committee, but its representatives do not comprise a majority of the membership. Address suggestions to OHI Joint Code Committee, 30 Rockefeller Plaza, New York 20, N. Y.

Indoor Comfort Conferences

Columbus

ONE of the Conferences held in April took place in Columbus, Ohio, which is noted as being the center of a large concentration of nationally known manufacturers of warm air heating equipment. It was the second largest Conference that had been held up to that time and on another page are pictures taken at the Conference that give some idea of how large and enthusiastic the group really was.

Omaha

The Omaha "Indoor Comfort" conference of the National Warm Air Heating and Air Conditioning Association, held on May 12 and 13, came within five persons of setting a national attendance record.

According to Mr. Guy Voorhees, application engineer and representative of the association who conducted the two-day Omaha meeting, it attracted from the Midwest area only four persons less than Cincinnati which, to date, has mustered together the largest number of heating and air conditioning specialists in the present series of sessions.

Contractors, utilities and gas companies, universities, city furnace inspectors and heating manufacturers are just a few of varied groups and individuals who attended the conference to learn latest indoor comfort heating methods as developed by the heating industry.

Carolinas

THE May issue of "The Carolinas Roofer" published by The Carolinas Roofing and Sheet Metal Contractors Association carries a list of the membership, with addresses.

The Owen Roofing Company of Columbia, S. C., has supplied some roofing facts worth knowing—inflation, business risks and profit margins—with some typical examples of increased costs in the roofing business from April, 1946 to April, 1947, and finally a promise to his customers to estimate each job carefully, and to quote a price containing a fair margin of profit, thereby assuring that work will be well and faithfully executed.

Officers, directors and committee heads met in Charlotte on April 1st at the Hotel Barringer. Present were President Earl DeLay, Hilton Bowles, Vardry Ramseur, Jr., Joe H. Piper, J. Victor King, J. C. Ware, L. G. Martin, W. H. Arthur, Jr., Prentice Baker, Charlie Reeves, Ralph Barker, Harry Powell and Hamilton Jones. Messrs. Powell and Jones were president and secretary of the associate members. The secretary-treasurer's report was read and approved.

The legislative committee reported that the South Carolina Committee has been active in support of the anti-closed-shop bill for South Carolina.

The value of local association in obtaining members for the Carolinas association, possible scholarships, the value of individual members obtaining new members, were the most prominent subjects discussed under improvements to be made in the association.

A member gave an interesting picture on the labor situation. Other members are listed as having spare metals or other materials.

Tom W. Young, Sr., who sold his business to Lucky Martin some seven years ago, when his health began to fail, died recently at the home of his daughter in Raleigh.

J. A. Piper, Editor.

Fox Valley

AT THE May 20, 1947, meeting of the Fox Valley Furnace and Sheet Metal Contractors Association the following motions were presented:

"That Section I, Article III of the Constitution and By-Laws be amended to include the towns of Naperville, Harvard, Woodstock, and Crystal Lake."

This motion will go up for a vote at the next regular meeting, which will be held on Tuesday, June 17, 1947.

The second motion was:

"The dealers of the Association hope that all manufacturers who supply them with equipment and merchandise send to each dealer a notice of all material and merchandise, which they have on back order, whether these back orders have been verbal or written, so that the dealers can notify the manufacturers whether or not they wish the merchandise shipped, if and when the merchandise becomes available."

NEWS VIEWS . . .



Minnesota Association Officers: Left—F. W. Legler, 1st vice president; R. E. Walsh, 2nd vice president; C. E. Parriot, president; Thomas Burniece, Jr., secretary; Right, front—Harvey Quade, Jr., 4th vice president; rear—Dwight Johnson, Lester Peterson, H. T. Helle.



Scene at the recent convention of the Sheet Metal Contractor's National Association showing Past-President Pat Varden receiving a plaque from Director Harvey Orton that expressed the high regard which the Association felt for its retiring head.



A view of the large group that attended the Indoor Comfort Conference in Columbus.



The Omaha Conference is the subject of this shot and the boys look rather weary. Gay gives them a real workout.

"COOL CUSTOMER... THIS HEATING PROSPECT"



HIS FIRST QUESTION PUT ME ON GUARD. "What makes the big difference in warm air conditioners? I know all about their filtered, humidified, warm air and the nice dressy jackets. I know too, that this Fitzgibbons is a good unit, with heavy, all-steel Weldseal construction, but what other differences are there?"



"FITZGIBBONS CONTRA-FLO CIRCULATION makes one big difference—the return air flows over the heating surfaces counter to the flow of combustion gases in the furnace, picking up heat progressively as it moves thru the conditioner back into the house. You get all the heat your fuel dollar buys . . .



"YOU DON'T WANT YOUR HOME TO SOUND LIKE A WIND TUNNEL so, quiet operation should be a 'must.' Notice the motor mounted firmly on the brackets. No throbbing and it purrs like a kitten. The blower is of ample size so that high speed is not necessary, hence blower sound is minimized too. The Fitzgibbons Directaire is carefully engineered in every way."



"TOLD YOU I'D MAKE QUICK DELIVERY. Looks good here in your home, doesn't it?"

"Say I am pleased. I bet you're making lots of deliveries on these fine Fitzgibbons Directaires. Must be a nice line to handle—especially now that people are particular about the *quality* of the equipment they buy. I'm glad I made such a good buy."

Fitzgibbons Directaire Conditioners are sized from 65,000 to 100,000 B.t.u./Hr. Full data in the bulletin, on request.

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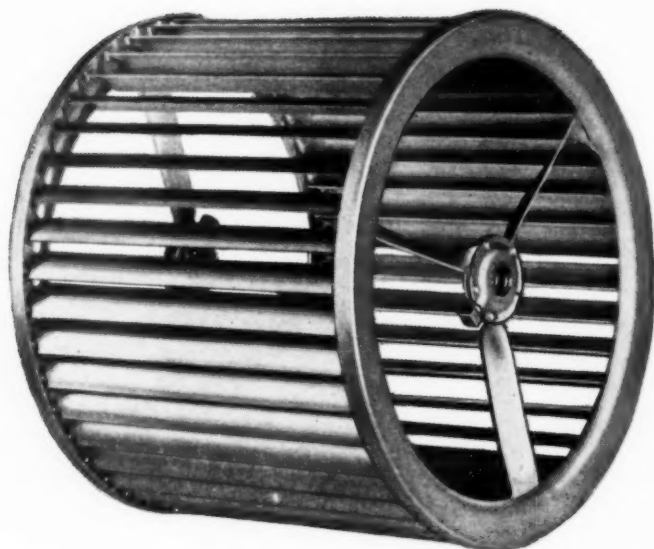
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The warm air conditioner that meets all conditions

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MORRISON

BLOWER



WHEELS



3-piece spot welded,
smooth running, light weight wheels that are quiet
in operation, rigid and long lasting. With the
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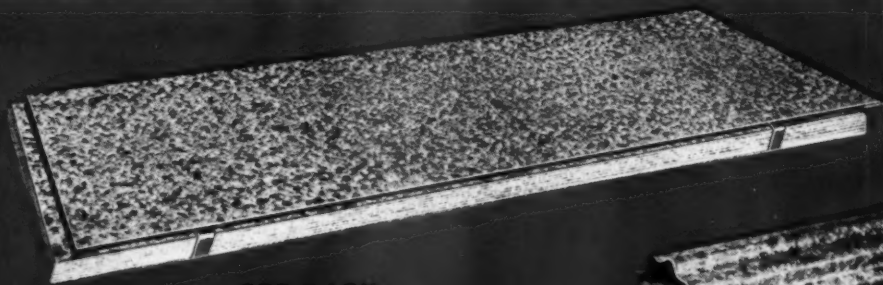
All manufacturers of original equipment should
write for a copy of book illustrated. The
data, graphs and charts will prove valuable.

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16816 WATERLOO ROAD

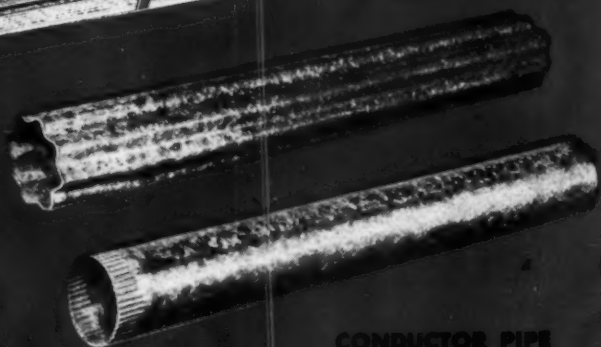
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to do a
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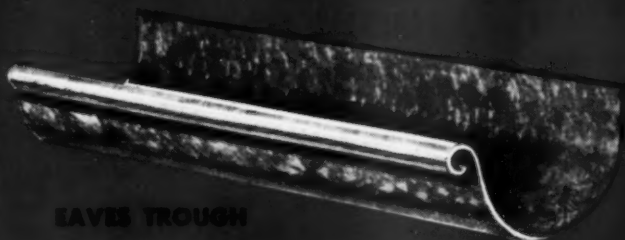
WITH WHEELING COP-R-LOY PRODUCTS



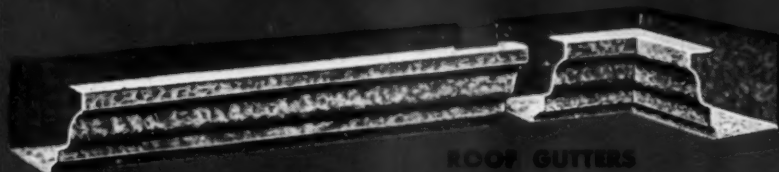
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MODEL 51

**EASILY ADAPTABLE TO SHORT VESTIBULES
EASIER TO INSTALL AND SERVICE**

Now! A burner that measures only 9½" from front of mounting plate to rear of burner. Designed for simpler, quicker installation and servicing. Transformer swings aside permitting easy withdrawal of drawer assembly. No wires to disconnect! DRAWER ASSEMBLY CAN BE REMOVED IN 10 SECONDS. Available in three sizes from 0.6 to 2.5 gallons per hour, each equipped with such exclusive engineering advancements as the ABC Choke, Spinner, Peri-Spin Turbulator and Governoil Nozzle.

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*If you can work galvanized steel—
you can work Stainless Steel*

...and with the same equipment!

BECAUSE it adds beauty, endurance, corrosion resistance and long life wherever used, Stainless Steel—and particularly U·S·S Stainless—is being specified for more and more equipment.

Alert, up-to-date sheet metal shops are cashing in on this popular preference for Stainless. They are finding it easy to turn out Stainless jobs on *the same shop equipment* that they are using to fabricate galvanized steel.

The only difference in working with Stainless is a slightly different fabricating *procedure* that is not difficult to set up or hard to master.

Because of its uniformity in composition, in finish and fabricating quality, you will find perfected U·S·S Stainless is readily fabricated into A-1 jobs that practically guarantee customer satisfaction.

To help you take advantage of the large and continually increasing demand for jobs in Stainless Steel—to help you turn out *quality* work that will enhance your reputation and bring you more business, write for our book—"Fabrication of U·S·S Stainless and Heat Resisting Steels." Use it with confidence as a practical guide to produce the best-selling, most profitable jobs your shop has ever done.



U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS



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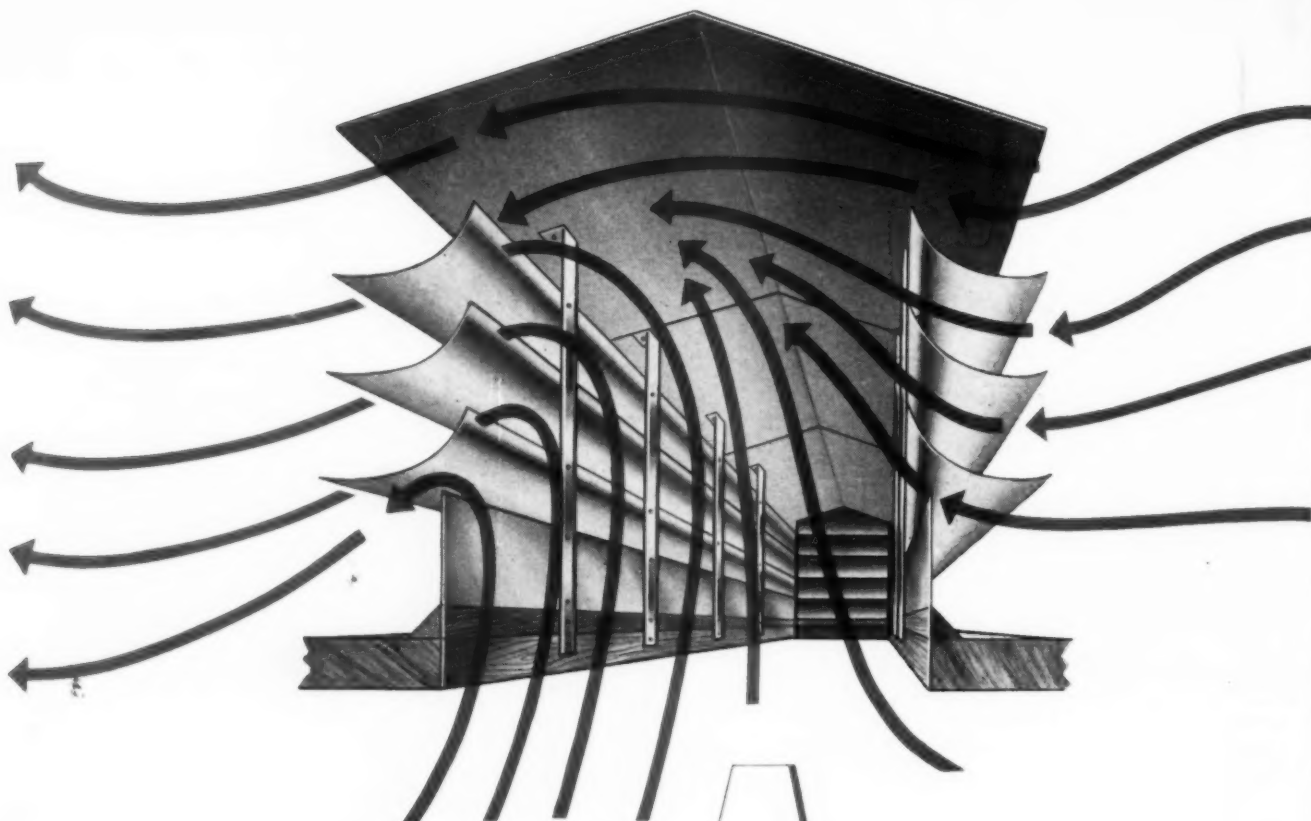
UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco

NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

UNITED STATES STEEL SUPPLY COMPANY (Warehouse Distributors), Chicago · UNITED STATES STEEL EXPORT COMPANY, New York



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to learn the secret of

AIRJET

Airjet Roof Ventilators and Vent Flue Caps are designed on the Venturi and Siphon principle. Wind velocities from any direction strike the curved surfaces of the horizontal vanes forcing the air upward, then under the top cap, and finally out and downward on the opposite side. The force of air moving down, across the openings, between the vanes, creates a negative suction. The name Airjet was selected because these units actually set up a jet of air. Airjet is **POSITIVE** and **DEPENDABLE**. Caltech certified tests **PROVE** our claims.



For more technical information see the Architectural and Mechanical Sections of Sweets 1947 Catalog.

C. R. GELERT COMPANY
35 North Raymond Avenue
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Please send me your new catalog on Airjet Roof Ventilators and Vent Flue Caps.

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COMPANY _____

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C.R. GELERT CO.

35 N. Raymond Ave., Pasadena 1, Calif.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on Page 113 and mail to us

△ Indicates manufacturer not listed in 1947 Directory.

• Indicates type of product not listed in 1947 Directory.

65—Galv-Weld

A solution to the problem of how to weld or braze galvanized sheets without destroying some of the zinc coating thus leaving the metal subject to corrosion seems to be at hand in Galv-Weld Alloy. This low melting point galvanizing alloy can be rubbed over the hot weld, thus spreading a smooth coating of metal which will have all the corrosion resistant qualities of the original coating.

The substance works as well on galvanized pipe as on sheet and is of value wherever welded seams are used.—*Galv-Weld Products, P. O. Box 37, Sta. D, Dayton 10, Ohio.*

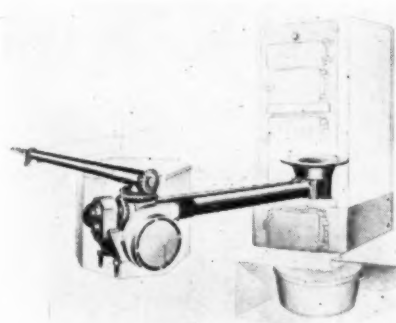
66—Weld Timer

Timing and sequencing of resistance welders is made easy by a system of factory-assembled controls that Westinghouse has produced. The Synchronol subunits may be combined to make hundreds of control requirements and they may be easily set with the settings protected from tampering.

Maintenance is reduced by the fact that all parts are readily accessible. — *Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.*

67—Stoker

An automatic anthracite stoker called the Anchor Furnace Tender has been placed on the market. Of the type that feeds coal from the bin to the furnace it is fully equipped with automatic controls that make its operation simply a matter of selecting the correct temperature on the thermostat.



Special attention has been paid to keeping the unit silent as well as sturdy and free from service requirements.—*Anchor Stove and Range Div., Stratton & Terstegge Co., Inc., P. O. Box 1859, Louisville 1, Ky.*

68—"Gilsalume"

An aluminum paint called "Gilsalume" is now on the market to provide weather-proofing, protection and insulation for home, farm buildings and business structures. The name is derived from the ingredients — gilsonite asphalt and pure aluminum pigment.

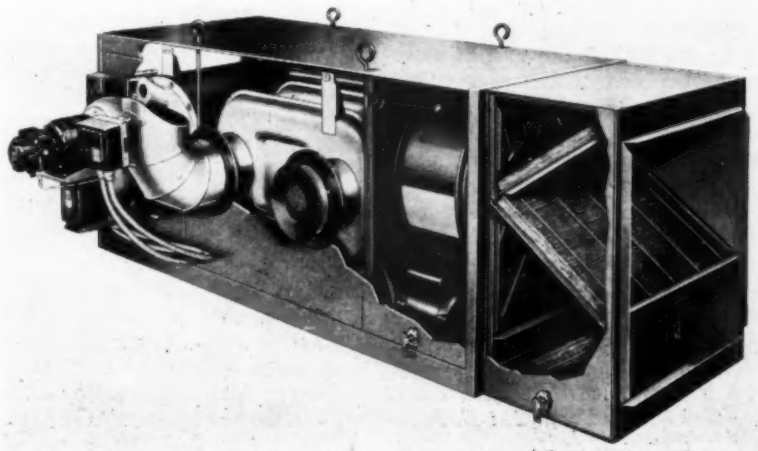
The paint is suitable for use on asphalt shingles, smooth or slate roll roofing, built-up slag or metal roofs, non-porous masonry and outside metal work. It will be distributed through paint and hardware stores.—*United Gilsonite Laboratories, Scranton, Pa.*

69—Solder Flux

A new type of buffer has been added to Wetoil soldering flux in order to reduce the amount of corrosive action usually present in liquid fluxes. The alkaline buffered residue is readily soluble in water and thus may be removed by washing.

Wetoil contains a powerful wetting agent to penetrate oil and grease and is especially suited to use on copper, brass, tinned steel and terneplate.—*Farrelloy Company, 1245 N. 26th St., Philadelphia 21, Pa.*

70—Suspended Oil Furnace



Perfection has developed a new suspended oil furnace for stores, warehouses, super-service stations and establishments of like size. Weighing only 650 pounds the new furnace can be installed with no alterations to the existing structure needed.

Fuel is drawn from an outside tank by a heavy-duty, 2-stage fuel pump to a pressure atomizing burner approved for No. 3 fuel oil. Operation is thermostatically controlled using an axial-flow blower of two-stage design to distribute the air. Output is rated at 200,000 Btu per hour.—*Perfection Stove Company, Cleveland, O.*

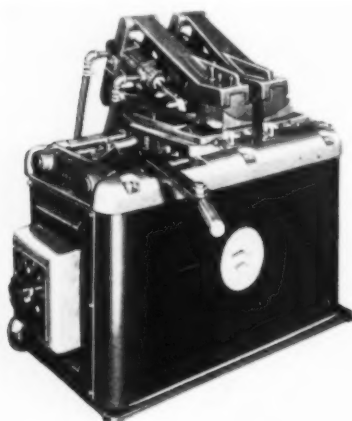
Equipment Developments.....

For your convenience in obtaining information regarding these items, use the coupon on Page 113.

71—Bench Welder

A bench type 10 KVA butt welder has been put in production to meet the needs of the small sheet metal shop or small manufacturing operation.

The unit has eight ranges of heat and a transformer that is water-cooled with an asbestos shield. The head is of high strength bronze, water cooled and has good electrical conductivity.



Control is by a covered foot switch connected to a four-way solenoid air valve which brings the clamps to position. The movable platen has a pilot switch connection that closes to apply current to the joint when it approaches the stationary platen for upset.

Air line equipment is included with the machine which is furnished for either 220 or 440 volt, 60 cycle current.—*Banner Products Co., 4912 N. 29th St. Milwaukee 9, Wis.*

72—Rust Remover

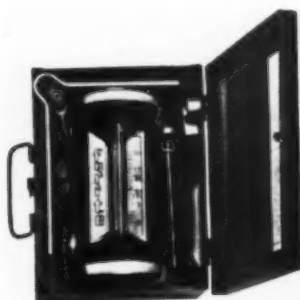
Another war development in a postwar package is CorOdex, a liquid rust remover which is effective on even the thickest coats of rust. It is easily applied with a paint brush or swab and is not injurious to the hands of the user.

The removal of rust is accomplished with no alteration in the structure of the metal or change in contour. Long immersion will

leave a surface with a blue-black oxidized finish that is resistant to further rusting.—*Allied Products Co., Dept. R 1, 1133 W. Newport St., Chicago 13, Ill.*

73—Service Kit

Bacharach has added two features to its Fyrite Combustion Service Kit that are worthy of notice from a convenience standpoint. A metal case with metal handle and snaps is now standard equipment and an all-metal dial thermometer, 100 to 950 F range, may be obtained in place of the mercury-in-glass type.



Advantages of the all metal thermometer are easy readability, handling convenience and elimination of the breakage hazard.—*Bacharach Industrial Instrument Company, 7000 Bennett St., Pittsburgh 8, Pa.*

74—Evaporative Cooler

One of the difficulties with evaporative air coolers has been that of keeping the pad at the proper state of moisture content and preventing the entrance of any hot air that has not been cooled by the evaporation process. Polaire has attempted to solve this by making the excelsior blanket in the shape of a roll and revolving it in the water tank, to keep it wet at all times and drawing the air through this blanket.

A 1/3 hp motor operates both the blower and the pad and the level of water is controlled by a float valve.—*Polaire Cooler Corp., 141 E. Jackson St., Phoenix, Ariz.*

75—Bench Filer



There is a new DoALL Bench Filing machine for filing, honing and sawing operations that features the patented universal joint clamp which assures a vertical file position no matter what the condition of the shank may be.

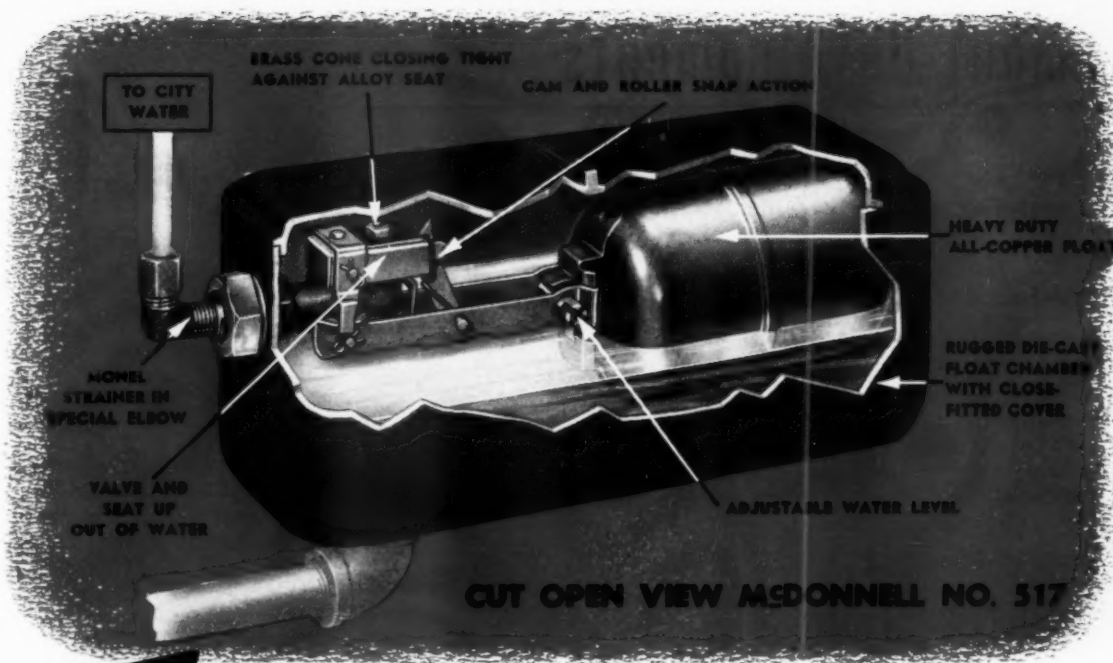
Tools are actuated by a yoke running in an oil bath and a window in the housing shows the oil level at all times. Vertical shaft bearings are adjusted by locking thumb screws on the outside of the housing. A flexible tube is provided to remove chips at the point of work.

The unit is powered by a 1/4 hp., 110 volt motor that gives 350 strokes per minute, stroke being 1 1/2" with a file shank capacity of 1/8" to 3/8". Equipment includes files, saw and honing stone with illuminated magnifying attachment and diamond hones available.—*DoALL Company, 254 N. Laurel Ave., Des Plaines, Ill.*

76—Monel Torch

Now that the war-caused shortage of critical materials has ended Airco has again started to produce their Series 9000 cutting torch. With a torch head of Monel metal and tubes, lever and handle of stainless steel, the torch offers very definite quality features. A further refinement is that all joints are silver-brazed to assure leak proof service.

The torch is 21" long and weighs 3 lbs, 4 ozs. and can be used with a total of 22 different cutting tips to make it adaptable for nearly any type of cutting operation.—*Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.*

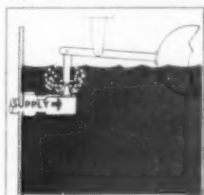


THERE'S NOTHING LIKE IT!...

A man who knows his float valves examined the McDonnell Float Valve pictured here and said, "Looks like you are the first people to take this matter seriously!"

You quickly discover how well this description fits the McDonnell No. 417 when you compare it with other valves. Everything about it—in both design and construction—shows that its development was one more chapter in the story of "Doing One Thing Well"—to you who use them, a *vital* thing.

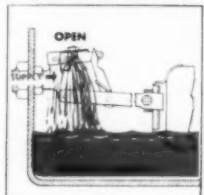
★ NO DRIBBLING



By its very nature, the conventional float valve is sure, sooner or later, to get into trouble. Basically, it is simply a float and arm attached to a valve which cracks open and dribbles water into the pan as soon as the water level begins to fall. Obviously, such a valve is rarely wide open. It simply attempts to maintain a level by constantly dribbling water. Exposed, as it is, to high

temperature, it is soon plugged up with lime or is clogged by debris and foreign matter as you know only too well.

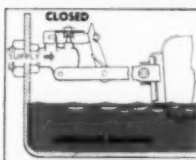
★ INSTEAD OF DRIBBLING — SNAP ACTION!



The biggest difference in the McDonnell Float Valve is the valve mechanism which gets away from this dribbling action. Its ingenious cam and roller construction snaps it wide open when the float drops $\frac{1}{4}$ inch. This opens up a full stream of water... thoroughly flushes out the seat. When the water level is restored, the cone seats with the same positive snap action. Moreover it seats tight against water supply pressures up to 150 lbs.

temperature, it is soon plugged up with lime or is clogged by debris and foreign matter as you know only too well.

★ TIGHT CLOSING VALVE—UP ABOVE WATER



This positive "snap action" alone would place the No. 417 in a class all its own, but it is only proof-number-one that there is nothing else like it. In the current model the valve and seat are up out of the water. The brass cone is firmly thrust into an alloy seat to provide a water-tight closure.

★ FLOAT LEVEL ADJUSTABLE



A heavy gauge copper float (not plated) gives ample float power, and an outstanding feature is the slide which permits raising or lowering the float by merely loosening one screw so that the water level in the pan can be adjusted.

★ MONEL STRAINER PROTECTS VALVE



An extra precaution to assure positive operation is the monel strainer mounted in a special compression fitting connected to the city water supply, where it can be easily removed and cleaned. With the valve located out of the water, with the sluicing action of a full stream to keep it clean, and with the added safeguard of the strainer in the

water supply line, you can be sure *this* valve *will* work right.

★ INDIVIDUALLY TESTED

Everyone of these valves is individually tested. Their feeding action is tested and their ability to seat against water pressure up to 150 lbs. is tested. Leading manufacturers of warm air furnaces, air washing equipment, dehumidifying apparatus, and cooling equipment have adopted the McDonnell Snap Action Valve. They are available without float chamber (No. 417) or mounted in a sturdy die-cast chamber with neat, well-fitted cover (No. 517). In these two forms they are adaptable to every requirement for a valve of this kind. Ask for details.

MCDONNELL & MILLER, INC., 1318 Wrigley Building, Chicago 11, Illinois

Doing One  Thing Well

MCDONNELL SNAP ACTION FLOAT VALVE

... with the ingenious

Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 113.

77—Pre-fab Chamber

Prefabricated, adjustable combustion chambers have been developed by Pemco. These chambers are of high quality fire clay (of two weights) and are an addition to their line that already included stainless steel chambers.



The heavyweight chambers are made with a fusing point of 3100 F while the lightweight chambers, excepting the burner block, have a fusing point of 2300 F. As the illustration shows the segments are identical and the chambers are shipped in packaged sets.—*Petroleum Equipment Mfg. Co., P. O. Box 1533, New Haven 6, Conn.*

78—Test Instruments

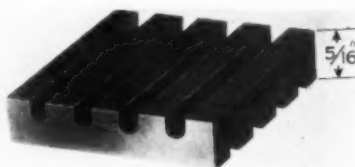
Transparent plastics find their latest uses in a new line of combustion testing instruments that include a draft gauge and CO₂ indicator.

The transparent CO₂ indicator gives complete visibility and is of a design so simple that its operation is made much easier. Since there is no glass used in the instrument and the metal parts are of stainless steel it is virtually unbreakable.

Also of transparent plastic is the portable draft gauge which measures all types of air velocities, drafts and slight pressure changes. Scale graduations extend a full five inches, with more than an inch of sliding adjustment and draft indication is said to be continuous.—*F. W. Dwyer Mfg. Co., 317 S. Western Ave., Chicago 12, Ill.*

79—Utility Pad

A utility pad made of oil-resistant Neoprene synthetic rubber and designed for use as a mounting pad to isolate vibration is now available. This use as a mounting pad is calculated to eliminate the need for permanent



fastenings for machinery and make it possible to move production lines whenever necessary.

Standard pads are 18" square and 5/16" thick and can be easily cut to any desired shape.—*MB Manufacturing Co., Inc., New Haven 11, Conn.*

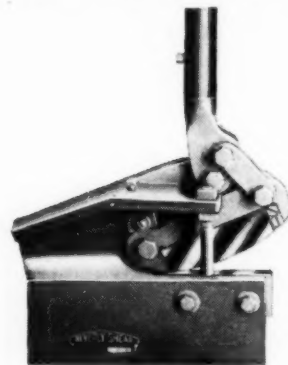
80—Draft Gauge

Bacharach has introduced an all-purpose draft gauge that is designed primarily for installation and service work on every type of heating plant. With the gauge is supplied 9 feet of rubber tubing and a 5 inch metal sampling tube.

Among the features of the gauge are an exceptionally large area diaphragm, for sustained accuracy and service, and a scale that is very readable because of its size.—*Bacharach Industrial Equipment Co., 7000 Bennett St., Pittsburgh 8, Pa.*



81—Slitting Shear



Beverly has produced a slitting shear of all steel welded construction that features interchangeable parts and has been engineered for extra strength where needed. Blades are of high quality tool steel tempered and drawn and adjustable for wear.

Power transmission is smooth and support is aided by an adjustable shoe at the back of the upper blade holder. Capacities are as follows: slitting—1/8" mild steel; trimming—3/16" mild steel; bar—1/4" x 2" mild steel; stainless steel—10 gauge (with special blades).—*Beverly Shear Mfg. Co., 3004 West 111th St., Chicago 43, Ill.*

82—Aluminum Roofing

New Holland has adapted weather-resistant aluminum to handle nearly every roofing requirement. The many features of aluminum that recommend it for such use need hardly be reiterated here but the styles available are of interest.

Crimped or corrugated sheets are stocked in a variety of sizes and thicknesses in addition to two styles of shingles, weatherboard and textures siding.—*New Holland Metals Co., Leola, Pa.*

83—Weld Electrode

Smith has introduced a welding electrode, SW-16, for light gauge welding in the sheet metal field. It is a high speed, heavy coated electrode for all position welding on mild steel of light gauge which welds with a minimum build-up and produces a bead contour that needs little finish grinding. Its characteristics are such that there is little bead sagging or burning through.

The electrode has a wide variety of applications in any field where light gauge sheet metal fabrication finds use.—*A. O. Smith Corporation, Milwaukee, Wis.*

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COMPACTNESS

means more for the customer's dollar

REMEMBER when furnace values were measured by the size of the unit? Today, modern research and engineering have completely changed that concept . . . have shown how the application of new materials, and new design can make for greater compactness and *higher heating efficiency* in smaller units.

For instance — Janitrol's *Multi-Thermex* tubes, combined with Amplifire ribbon-type burners.

With these two unique Janitrol developments, bulky combustion chambers are eliminated. Short, hot, uniform flames are burned

directly within the heat exchanger tubes. Heat is more quickly transferred to the circulating air chamber.

Results?

First, overall smaller size saves materials, permitting the use of more expensive alloys in certain critical parts for more rapid transfer of heat.

Secondly, the design and construction of Multi-Thermex tubes means quicker response to thermostat control. Less lag when heat is needed. Quicker cooling to prevent costly and uncomfortable overheating.

Third, smaller size of Janitrol makes possible factory assembling of heater, quicker, easier, less costly installation, and more usable space in the basement or utility room.

So, when you install a Janitrol FAC Winter Air Conditioner, you're installing *less* furnace by weight and volume—but *more heating economy* and *long lasting liveability* than is possible with conventional forced air furnaces. Write today for information and data on the complete line of Janitrol Gas-Fired Heating Equipment. Surface Combustion Corporation, Toledo 1, Ohio.

Janitrol

**GAS-FIRED
HEATING EQUIPMENT**



Winter Air Conditioner



Gravity Furnace



Conversion Burner



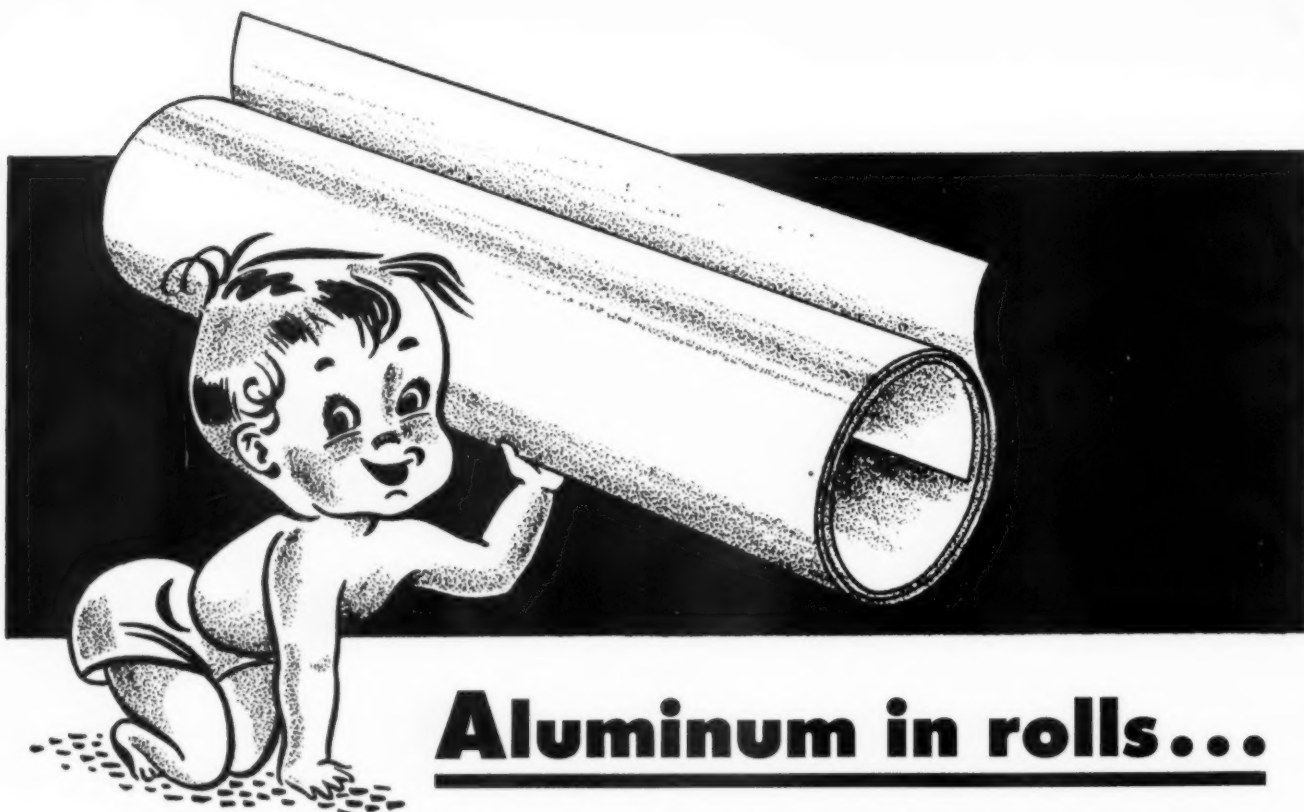
Unit Heater



Boiler



Floor Type Blower Unit



Aluminum in rolls...

now available at **NEW LOW PRICES!**

Aluminum saves time on the job and in transit. Each pound goes as far as three pounds of heavier sheet metal. Aluminum is hard enough to be durable, soft enough to be worked on any type of sheet metal working equipment. Millions of pounds of aluminum have

been used in the last six months for joist linings, ducts and fittings.

Today we can give you immediate shipment on Char-Gale Aluminum rolls!

We suggest 33" width—it can be used for fittings as well as for joist lining.

PRICE LIST *effective March 27, 1947*

ALUMINUM ROLLS

25 1/2 Hard—3/4 Hard Thickness—.025 (approximately the same as 24 gauge steel)

Pounds	Full rolls 500 lbs.	100-lb. rolls
30,000 and over . . .	\$0.246	\$0.266
20,000 to 29,999 . . .	.248	.268
10,000 to 19,999 . . .	.251	.271
5,000 to 9,999 . . .	.271	.291

Net Ten Days

Prices are per pound
for quantities shown

Pounds	Full rolls 500 lbs.	100-lb. rolls
2,000 to 4,999 . . .	.276	.296
1,000 to 1,999 . . .	.281	.301
500 to 999 . . .	.306	.326
100 . . . . .		.346

Prices subject to change without notice

WRITE
OR WIRE
YOUR ORDERS
TO —

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

MINNEAPOLIS, MINNESOTA

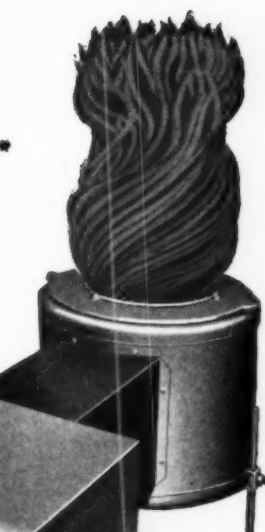
CHAR-GALE MFG. CO.

OMAHA, NEBRASKA

ANNOUNCING

Norman Hydroxylating CONVERSION OIL BURNER

*Oil completely vaporized to produce a clean quiet gas flame.



The Norman patented burner incorporates two outstanding improvements in oil heating. First, it features an improved method of vaporizing the liquid oil into gas and mixing the oil vapors with air to produce a cleaner, hotter gas flame. Second, the patented turbulator breaks up the flame into a series of shorter, swirling flames to create a more efficient heat distribution to the sides of the combustion chamber.

featuring a sensationally improved principle of OIL HEATING

IMPROVED HYDROXYLATING TYPE BURNER . . . featuring an advanced principle of vaporizing oil faster and more completely to produce a cleaner, hotter gas flame. It is adjustable up to a maximum capacity of 1 gallon per hour. A continuous operating, two-speed, low wattage blower eliminates all draft problems. Special alloy-cast, heat-resisting retort base.

TESTED AND APPROVED . . . the patented Norman burner has been tested in thousands of installations and is approved by the Underwriters Laboratories.

MODERN STREAMLINED APPEARANCE . . . The smart, trim lines and two-tone green baked-on enamel finish, with bright aluminum trim, will modernize the appearance of any type heating plant.

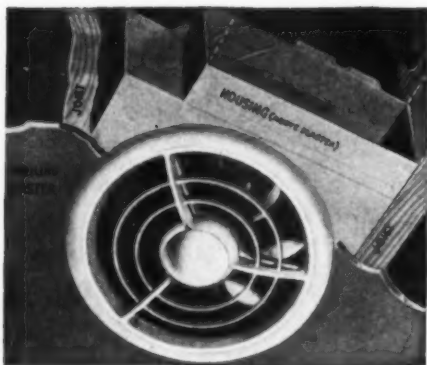
EASY TO INSTALL AND SERVICE . . . Can be quickly installed in most furnaces or boilers. Controls are housed in easily removable cover. Telescopic air duct is adjustable to permit minimum projection outside the furnace. Adjustable front and rear legs permit fast and accurate leveling of the burner.



Norman PRODUCTS CO.

Manufacturers of Norman Gas Conversion Burners, Norman Gas Furnaces, Norman Oil Conversion Burners.
1150 CHESAPEAKE AVE., COLUMBUS 8, OHIO
E. A. Norman, Jr., President D. D. Piper, Exec. Vice Pres. in Charge of Sales

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ELECTRIC CEILING VENTILATORS

Your Opportunity . . . For Additional Profits

3 WAY SUPERIORITY

EFFICIENT

Blo-Fan incorporates a patented principle combining the *volume* of a fan with the *power* of a blower.

CORRECT LOCATION

Blo-Fan is installed between the ceiling joists—where a fan belongs—capturing fumes as they rise, before they spread.

VERSATILE

Blo-Fan requires only 3½" above or behind the plaster—Fits between standard joists or studs—even on an inside wall—may be ducted thru roof or outside wall.



3 OPPORTUNITIES FOR INCREASED PROFITS

Home owners know that proper ventilation keeps homes clean—cuts redecorating costs. Cash in on owner demand with Blo-Fan spot ventilation.

In the **KITCHEN** ceiling, over the range, Blo-Fan takes out cooking grease and odors as they rise.

In the **BATHROOM**, Blo-Fan eliminates odor and steam... keeps walls and ceiling dry.

In the **DEN** or **GAMEROOM**, Blo-Fan keeps air fresh and clean.



3 SIZES AVAILABLE

No. 206 "Junior"—adequately ventilates the bathroom, kitchenette, or other small room. Divide cubic content of room by 175 for air change.

No. 208 "Standard"—the all-purpose ventilator for kitchen, den, laundry. Divide cubic content of room by 300 for air change.

No. 210 "De Luxe"—a 2-speed Blo-Fan for large kitchens, game rooms, living rooms. Divide cubic content of room by 500 for air change.



Blo-Fan

— More than a fan—more than a blower
Makes friends, and brings you new customers.
Write for the name of your Blo-Fan Distributor

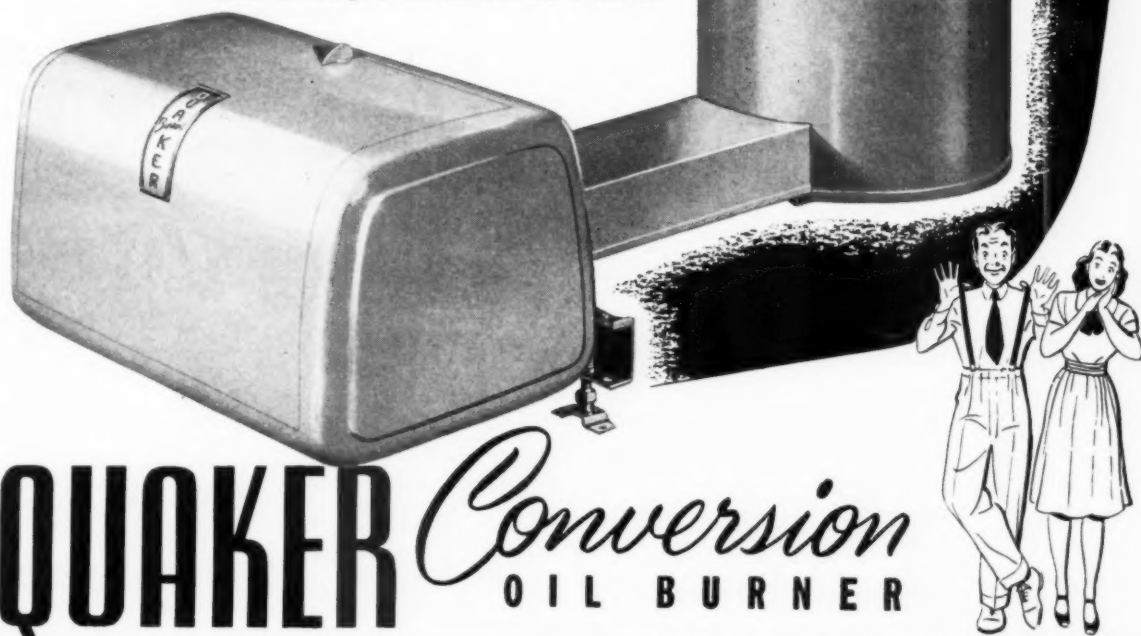
PRYNE & CO., INC., LOS ANGELES 54, CALIFORNIA • NEW YORK • CHICAGO

Now... FOR THE SMALL HOME MARKET...

QUAKER'S famous CONVERSION OIL BURNER is back . . . ready for profitable immediate delivery to the small home market! Promote it—sell it—install it NOW, during the off season. Then, you'll have more time for last-minute installations when the season is at its peak.

- **QUAKERTROL EQUIPPED.** Only **QUAKER** makes **QUAKERTROL** . . . the ingenious device that automatically regulates the flow of oil and air to the burner.
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- **PRICED TO FIT THE MARKET.** Priced for the pocketbook of the small home owner.
- **QUIET AS A WHISPER.** No combustion noise.

FRANCHISES AVAILABLE. Franchises now being offered to well established, reputable dealers. Immediate delivery can be made. Mail the coupon below for complete information and literature.



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New Literature

For your convenience in obtaining information on "Equipment Developments" and "New Literature" use coupon on Page 112.

88—Oil Burner

A new pamphlet lists the advantages of the Gemaco automatic oil burner. Designed for presentation to the prospect for an oil burner sale it has space for a dealer imprint. Theme of the piece is that heating with the Gemaco is automatic, clean, dependable, economical and quiet. Burners are available for any size of domestic installations.—*General Machine Co., Emmaus, Pa.*

89—Pillow Blocks

Prentice pillow blocks for air conditioning equipment, blowers and machinery are the subject of a mailing piece distributed by Western Thermal Equipment. Using the "exploded" technique the parts of the blocks are shown and shaft sizes, weights and prices are given. Special sizes may also be obtained.—*Western Thermal Equipment Co., 1701 W. Slauson Ave., Los Angeles 44, Calif.*

90—Grilles & Registers

Tuttle & Bailey have published a twenty page catalog on their recently developed line of Tri-Flex Grilles and Registers. Contained is a complete description of all Tri-Flex units, detailed engineering data and list prices.—*Tuttle & Bailey, Inc., New Britain, Conn.*

91—Refrigeration Units

Worthington has developed literature that describes its Freon-12 refrigeration units that are made with both air and water-cooled condensers. These folders give complete specifications of the units along with operating characteristics.—*Worthington Pump and Machinery Corp., Harrison, New Jersey.*

92—Fan Catalog

A catalog, in color, presenting in detail the complete line of 1947 fans is being distributed by Emerson-Electric. Design and construction specifications are featured along with performance data on the various types of desk fans, air circulators, ceiling fans, kitchen ventilators, exhaust and cooler fans.—*Emerson Electric Mfg. Co., St. Louis, Mo.*

93—"Three Phase" Welding

Sciaky has issued two bulletins that deal with the "Three Phase" balanced resistance welding system they have developed. One briefly analyzes the operation and its advantages while the other is a more complete technical description for the engineer interested in the basic process.—*Sciaky Bros., Inc., 4915 W. 67th St., Chicago 38, Ill.*

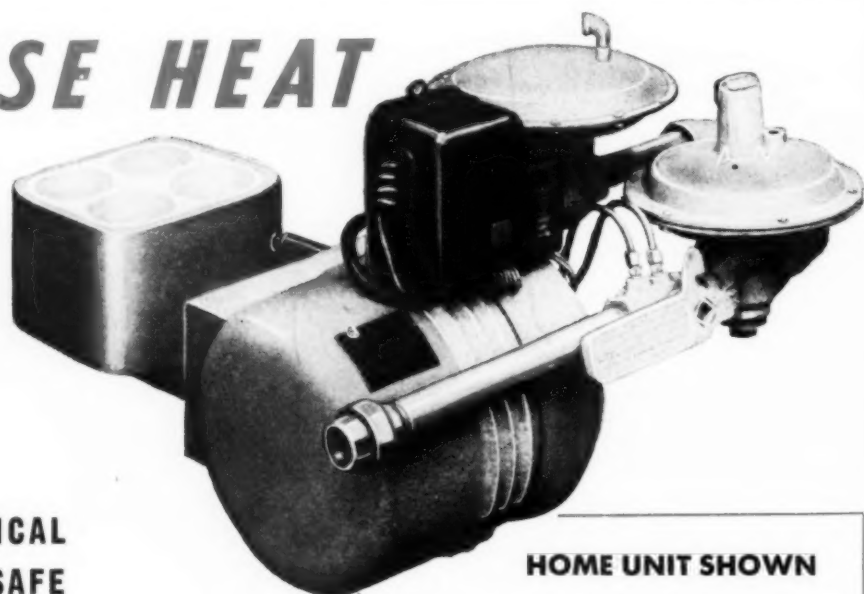
FINN-TENSE HEAT POWER TYPE GAS BURNER

- EFFICIENT • ECONOMICAL
- EASY TO INSTALL • SAFE
- AUTOMATIC • PROVED
- PATENTED FEATURES

JERRY FINN ENGINEERS, INC.

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201 No. FIRST NATIONAL BANK BLDG., ST. PAUL 1, MINN.



MADE IN TWELVE DOMESTIC AND COMMERCIAL SIZES. WRITE FOR DEALERSHIP.

HOME UNIT SHOWN

other sizes for . . .
**STORES • BANKS
APARTMENT BUILDINGS
SCHOOLS and
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Write for details

BETTER GET READY TO **Answer** WHEN CUSTOMERS QUIZ YOU ON **Fraser**



Fraser Blower-Filter Unit

You are going to hear about *Fraser*. This name will keep coming up in your neighborhood. The people who ring your phone are expecting you to know Fraser winter air conditioners.

They will be reading Fraser advertising. They will be sold on actual, practical advantages of Fraser appliances. They will want to buy the engineered features Fraser offers.

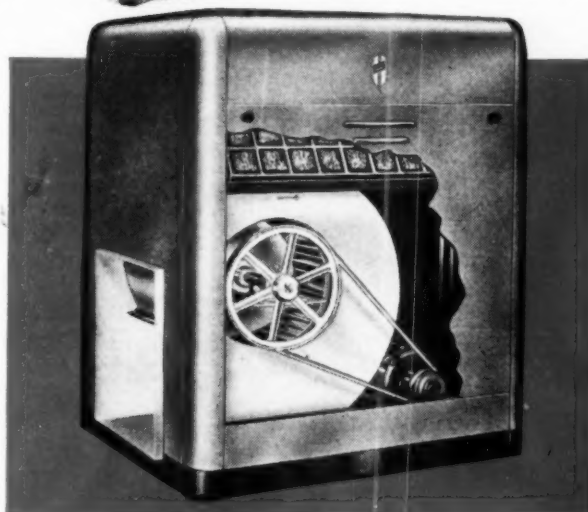
Will you be ready to tell them?
Will you be ready to *sell* them?

This appliance volume is good money. Easy installation gives you a good profit. Do you want it?

Let us send you the new Fraser booklets with pictures and specifications, so you can meet your customers' questions with the right answers.

Send in the coupon below and a representative will call on you. Sales promotion aids are **FREE**. Get yourself a Fraser Franchise.

You are going to hear from
Fraser



You can sell Fraser appliances on engineering merit. They enable you to *compete with profit*.

FRASER,

570 Lexington Avenue
New York 22, New York. DEPT. 000

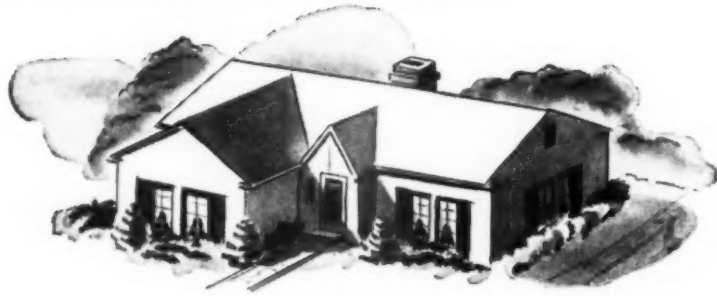
Send someone to tell me about the Fraser Franchise.

Name

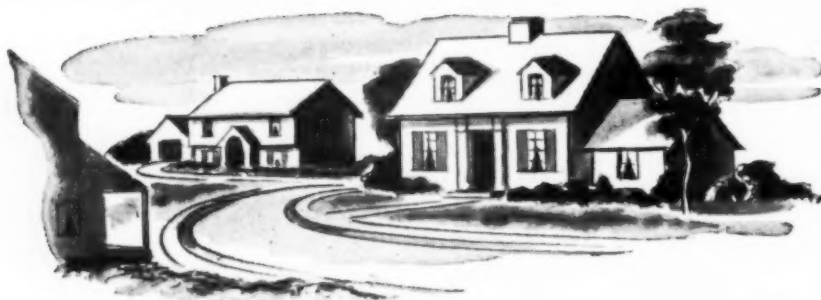
Street

City State

• First a Timken Home



• Then a Timken Street



• Then a Timken Town



It's happening every day... all over the country. Timken quality pays off!

The Royal Family of Oil Heating



OIL
BURNERS



OIL
BOILERS

TIMKEN
Silent Automatic
OIL HEAT

TIMKEN SILENT AUTOMATIC DIVISION
The Timken-Detroit Axle Company
JACKSON, MICHIGAN



OIL
FURNACES



WATER
HEATERS

New Literature

For your convenience in obtaining information on "Equipment Developments" and "New Literature" use this coupon.

94—ASHVE Guide

The Silver Anniversary Edition of the Heating Ventilating Air Conditioning Guide has been published by ASHVE. All of the 51 chapters have been reviewed by the Publication Committee and wherever improvements could be made in simplification of presentation of data or material such improvements are incorporated.

Some important chapters that were revised are the chapters on: Cooling Load; Treatment of Fuels and Combustion; Unit Air Conditioners, Air Cleaners and Attic Fans; Dehumidification by Sorbent Materials; Refrigeration and Air Duct Design.

A cross-index of the technical data section is included as well as a section giving information on the equipment of 240 manufacturers. Price, \$6.00.—*American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York, N. Y.*

95—Recorder Booklet

Bacharach is distributing a booklet that shows the methods of using Tempscribe Operation and Temperature Recorders in making the control adjustments needed for *Indoor Comfort*. These consist of proper fuel input rate; continuous blower operation; correct register air temperature and location of the thermostat where it can operate automatically. The steps are discussed in sequence and clear explanations are given for the engineering reasons behind each.—*Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh 8, Pa.*

6-47

American Artisan,
6 N. Michigan Ave.,
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83					
88	89	90	91	92	93	94	95

Name

Company

Address

Are you manufacturer? ☐ Jobber? ☐ Dealer? ☐

SUMMERTIME IS *General Time*

Summertime can be a busy season for those who actively push GENERAL filters. Get your customers lined up with a new fuel oil filter before the next heating season, and they'll be glad you recommended the best fuel oil filter available, GENERAL.



direct or to your nearest jobber for information on the GENERAL line of fuel oil filters.

FACTORY REPRESENTATIVES: WILLIAM J. DEBLER & SONS, Newark, N. J., Philadelphia, Pa., Brookline, Mass.; V. B. KATHE, Vancouver, Wash.; WESTERN SALES COMPANY, San Francisco, Cal.; W. V. NUTTALL COMPANY, Salt Lake City, Utah; B. E. HOWENSTEIN, St. Louis, Mo.; L. E. SCHULEIN COMPANY, Chicago, Illinois; GRANSE CORPORATION, St. Paul, Minn.; RICHARD BARTHELMSS SALES COMPANY, Jacksonville, Fla.; T. C. FRENCH COMPANY, Akron, Ohio; A. G. ALLEN COMPANY, Indianapolis, Ind.; JEFF A. HEDDON COMPANY, Atlanta, Georgia.

GENERAL FILTERS
INCORPORATED

GENERAL FUEL OIL FILTER

12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 1227 ST. CLAIR • TORONTO, ONTARIO

Your Customers WILL BE ASKING ABOUT THIS!

What'll she DO
IF THE
Oil Man calls?



Q: What can she do but trot down and let him in?

A: She could have a VENTALARM* installed on her fuel oil tank!

With VENTALARM* you don't have to let the oil man in at all, don't even have to be home while he fills the fuel tank. VENTALARM fill signal, attached to oil storage tank, emits a low whistle which can be heard through vent pipe leading outdoors. Then, when the whistling stops, your oil man knows that the tank's been filled. Not a Drop Spilled, and he hasn't even had to ring the doorbell.



Over 7,000,000 homes now enjoy
VENTALARM
The Oil Man Never Enters Home
U.S. PAT. OFF.

With VENTALARM
The Oil Man Never Enters Home
OIL HEATED HOMES ARE HAPPY HOMES!

Over 3000 independent fuel oil and burner dealers and 15 major oil companies provide this convenient service to their customers. Ask your dealer about VENTALARM.

MAIL COUPON FOR
Illustrated folder about VENTALARM
To: SCULLY SIGNAL COMPANY
88 First St., Cambridge 47, Mass.

Name _____
Street _____
City _____ State _____
Oil Co. Name _____
Oil Co. Address _____
Mfg. in Canada by Empire Brass Co., Ltd., London, Ont.

Eye-catching, attractive advertisements like the one reproduced here are currently pre-selling VENTALARM* convenience. (VENTALARM, of course, is the amazing whistling tank fill signal that makes an oil burner installation completely automatic.)

Seen in May issues of such magazines as *Woman's Home Companion*, and *Better Homes and Gardens*, this series is actually paving the way to ever-greater popularity for those oil burner dealers who offer VENTALARM with their burner installations.



We're constantly reminding future oil burner buyers that VENTALARM means complete freedom from interruption when the oil man calls - that with VENTALARM the driver need not ever enter the home. VENTALARM-aided deliveries get all the oil into the tank - no overflow, no fuel spilled into the cellar.

Why not take advantage of this powerful burner sales aid? VENTALARM costs little. Easily installed. Write today, for complete information and helpful sales booklets.

*T. M. Reg. U. S. Pat. Off.



With the Manufacturers

Chester and Price, 222 Bannatyne Avenue, Winnipeg, Manitoba, Canada, now represent the Krueger Sentry Gauge Company, Green Bay, Wis., in the provinces of Manitoba, Saskatchewan, and Alberta, as well as Port Arthur and Fort Williams in Western Ontario. Lines handled are liquid-level gauges and Sentry draft regulators.

Air Conditioning Department of General Electric has recently made several executive appointments in its new Commercial Refrigeration Division.

W. B. Miller is engineer of the Field Engineering Division; C. W. Brown, engineer of the Application Engineering Division; C. E. Ehrenhardt, engineer of the Engineering Commercial Division and R. W. Olson is supervisor of the Field Section of the Field Engineering Division.

Frederick E. Munschauer, Jr., is now works manager of the Niagara Machine and Tool Works, Buffalo, manufacturers of presses, shears and machines for sheet metal working.

Head of production and plant engineering before entry into the service, Munschauer became acting works manager after his release from the Armed Forces, proceeding from that post to his present one.

Moxie S. George has become district sales manager of the New York office of Inland Steel, going to that position from Chicago, where he had been assistant sales manager of the Tin Plate and Export Division of Inland's general offices.

Mr. George has been with Inland since 1934 and will succeed Powell Pardee in the New York office, Mr. Pardee remaining as special representative.

Crown Controls Company of New Bremen, Ohio, has purchased the Pioneer Heat Regulator division of the Master Electric Company of Dayton. The transaction gave to Crown all the special facilities, tools, dies, machines and patents and other assets of "Pioneer." All guarantees of "Pioneer" will be upheld by the new owner of the name.

Organized in 1945, Crown Controls has been expanding ever since and was already producing "Tempmaster" and "Crown" temperature regulators. Present plant facilities are being enlarged to handle the new acquisition.

Frank W. Bergmyer is the new Canton, Ohio, manager for building product sales of the Berger Manufacturing Division of Republic Steel Corporation. Mr. Bergmyer had formerly been with Milcor Steel and is a native of Canton.

Stanley R. Himsel of Marshfield, Wis., has been made district representative of the Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, Ill.

Himsel's territory includes sixteen counties in northwestern Wisconsin and all of Minnesota except thirteen northwestern counties. Before joining Oil-O-Matic, he was head of the heating and bottled gas department of Lloyd L. Felker Company in Marshfield.

HESS Radiant Heating Equipment is Best for ANY Fuel



BECAUSE OF the superior heat transmitting surfaces of the Hess Furnace, it fulfills all heating requirements when used with any automatic oil burner, gas burner or coal stoker.

More than 74 years of experience in

building quality heating equipment is your assurance that you are offering your customers America's leading furnaces designed to utilize the maximum radiant energy for any fuel, whether coal, oil or gas.

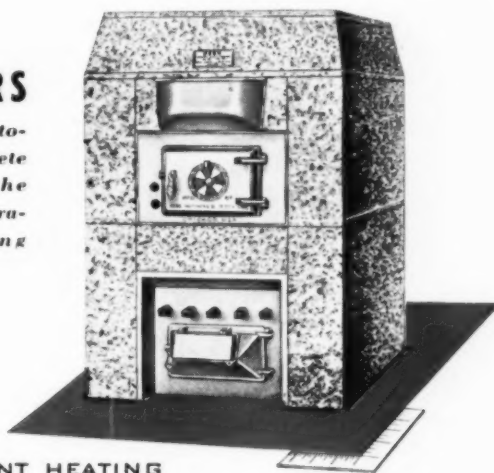
MAKE MORE SALES

MORE INSTALLATIONS

MORE PROFITS

DEALERS

Write or wire today for complete details on the Hess line of radiant heating equipment.



ON THE SQUARE RADIANT HEATING

HESS

Since 1873

WARMING & VENTILATING CO.

1211 So. Western Ave., Chicago 8, Ill.

With the Manufacturers

New district managers are representing Heil Company of Milwaukee in the west and middle-west. Leonard C. Andersen, Los Angeles, will handle the states of California, Arizona and Nevada. He went to this job from the post of sales coordinator in Milwaukee, where he was replaced by Karl Mindemann. Herman Wagen has taken over as district manager for Wisconsin, Michigan, Illinois, Indiana, Ohio and Kentucky with headquarters in Milwaukee. Tom Boyle was transferred from the Kansas City office to the Milwaukee office at the same time.



L. G. Andersen

H. Wagen

A major activity of the Heil Company in recent months was the Sales Clinic it held in Milwaukee, which was the first since the start of the war. Discussions covered all present and future Heil products as well as the plans the company has for the future.

B. F. Sturtevant Division of Westinghouse Electric Corporation has established branch offices in Dallas and Houston, Texas. H. J. Waggle is southwestern district manager and is located in the Dallas office while F. M. Mayse is branch manager in Houston.

Both offices have complete staffs of application engineers to handle installations of Sturtevant equipment.

A series of changes in personnel have been made by the Herman Nelson Corporation of Moline. Huntington Sharp is now sales promotion manager and the following changes have been made in branch offices: Anthony Spoodis is now manager of the Minneapolis office and Carl H. Johnson, Jr., will be associated with him; Frank Tyler replaces Mr. Spoodis in the Moline office; Harold C. Gerboth is manager of the St. Louis office and E. Paul Harder will be with him there.

The appointment of E. P. Murr, 1340 East 14th Avenue, Denver, Colorado, as Research Products Corporation representative in Colorado and Wyoming, has been announced by officials at the home office in Madison, Wisconsin. The company manufactures air filters, water treating materials, and expanded fiber products.

Robert M. Pettigrew is the new eastern district manager for the Heating and Appliance Division of Evans Products Company of Plymouth, Michigan.

Pettigrew, who has been with Evans since 1943, will have charge of Michigan, Indiana, Kentucky, Tennessee (except Memphis), Pennsylvania, West Virginia, New York and the New England states. His office will be at the main Evans plant in Plymouth.

Leading the Field



MULKEY

Manufacturers of
Oil and Gas
Floor Furnaces

•
Conversion Burners

•
Oil Trailer Heaters
and Room Circulators



TRAILER HEATERS

FLOOR FURNACE



Oil

FLOOR FURNACE

IN THE LONG RUN

EXPERIENCE AND PERFORMANCE COUNT

WHOLESALEERS • DEALERS • BUILDING CONTRACTORS

Write or wire today for immediate delivery

J. F. MULKEY CO.

12626 WOODROW WILSON • DETROIT, MICHIGAN

23 YEARS OF EXPERIENCE IN DESIGN AND MANUFACTURING

THERE
IS A
THERMO-DRIP
HUMIDIFIER
FOR EVERY
TYPE OF
WARM AIR
FURNACE

Made by
Automatic HUMIDIFIER CO.
CEDAR FALLS
IOWA

The Secret of **THERMO-DRIP** Efficiency...

THERMO-DRIP HUMIDIFIERS moisten air as it is heated — in direct proportion to temperature — by accurate thermostatic control. That is the simple secret back of the wide acceptance and success of **THERMO-DRIP**.

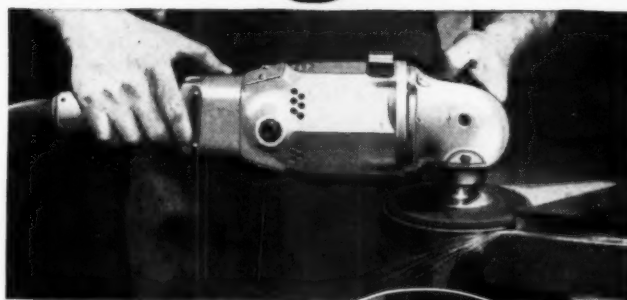
THERMO-DRIP'S superiority of performance is the direct result of the exclusive **THERMO-DRIP** principle of water feed control as called for by the specific temperature within the furnace itself.

Thus positive evaporation is assured with resultant heat plus comfort for furnace users.

THERMO-DRIP HUMIDIFIERS are manufactured of the finest materials and are engineered for easy installation. Available in a variety of pan sizes for every type and make of warm air furnace.

Write today for all the facts on **THERMO-DRIP** Humidifiers.

Black & Decker **SANDERS** DO ALL 3 FASTER!



1 Sand Any Surface...
With abrasive discs, Black & Decker Portable Electric Sanders speed up sanding of any surface from fast metal removal to satin-smooth finishing.



2 Grind Any Metal...
With saucer or cup-type grinding wheels, Sanders remove excess metal; do a speedy job of "V-ing out" joints to be welded; smooth welded surfaces.



3 Speed Wire Brushing—With B&D "Whirlwind"® Wire Cup Brushes, Sanders take off old paint, rust, scale; clean tanks, boilers, furnaces, sheet metal and soldered joints; prepare surfaces for welding.

*Trade Mark Reg. U. S. Pat. Off.

Ask Your Nearby **Black & Decker Distributor** for full information on these labor-saving tools. For details on Sanders and many other Portable Electric Tools for heating, piping and air conditioning work, write for our catalog to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Md.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

**A CUSTOMER is still
a Mighty Important
PERSONAGE at H&C**



... an individual we're anxious to please—whose good will, in most cases gained through many years of pleasant relationship, is our highest prized asset.

It may be that we can't furnish you promptly all the registers you want at the present moment, but you can bet your bottom dollar no effort has been spared to reach that happy situation just as soon as the supply of materials will permit.

In the meantime we are doing our best to distribute our production as equitably as possible, and you may be sure that H&C quality remains what it always has been—**THE HIGHEST IN THE INDUSTRY.**

For the best register for every type of installation see our current catalog No. 46

THE H & C NO. 130 BASEBOARD REGISTER

The best designed, best made Baseboard Register for Gravity or Reconversion



HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

Obituaries . . .

John B. Sauer

John B. Sauer, a heating engineer for the Meyer Furnace Company of Peoria, and a resident of that city for the last 31 years, died recently. Mr. Sauer was 67 years of age having been born at Hamshire, Ill., on Nov. 27, 1879.



John B. Sauer

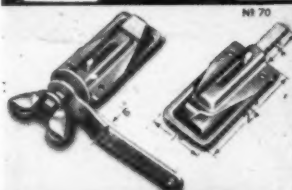
Mr. Sauer had a wide circle of friends in Illinois since he had traveled the state for Meyer since 1918 and prior to that time had been with the Quaker Manufacturing Company and Culter and Proctor.

One activity that had claimed much of Mr. Sauer's time was the Salesmen's Auxiliary that used to be a part of the Illinois Sheet Metal Contractor's Association. He had been its Treasurer for a number of years.

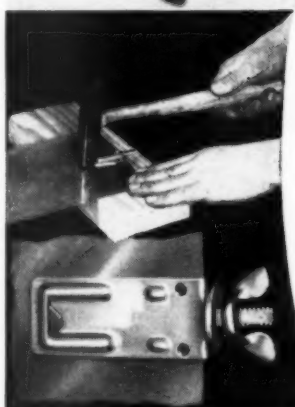
Zay Smith

Zay Smith, 70, of 905 Euclid, Houston, Texas, who operated the Zay Smith and Sons Sheet Metal Workers for twenty years, died at his home May 21. Native of Somerset he had lived in Houston 20 years. Previously he had been in the sheet metal business in San Antonio for 30 years. His wife, two daughters and four sons survive.

H&C KWIK-WAY DAMPER REGULATOR SETS



**Most Easily and Quickly
Attachable Sets on the Market**
STURDY • RATTLE-PROOF
NO ANVIL REQUIRED
IDENTICAL 5/16"
RETRACTABLE BEARINGS



Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.

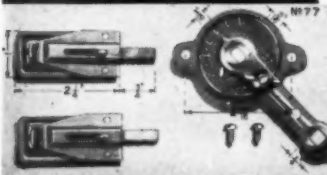
LIST PRICES

No. 70 Set \$0.30
No. 77 Set 0.40

FOR LARGE DAMPERS

No. 50 3/4 Set \$0.60
No. 80 3/4 Set 0.60

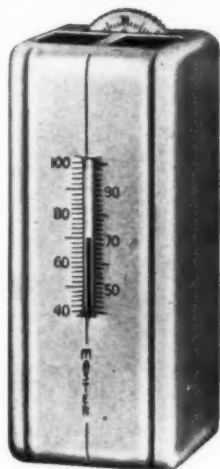
See your jobber or
write for literature.



HART & COOLEY MANUFACTURING CO.
HOLLAND MICHIGAN

MASTER TEMPERATURE CONTROLS

Earn their Reputation



**A-23 Plain
Thermostat**

as instruments by rendering precision-performance—every one!

Over a quarter century of knowing how and doing well has raised the name "MASTER" to a high position in the industry—a standard of long life, comfort and economy for your customers — friends and future sales for you.

The policy of taking more pains than seems necessary in the manufacture of each individual part and inspection and test of each unit, pays in customer satisfaction . . . For this reason "Master" Controls are specified as replacements, and in more and more new construction.



**D-22A
Regulator
Switch**



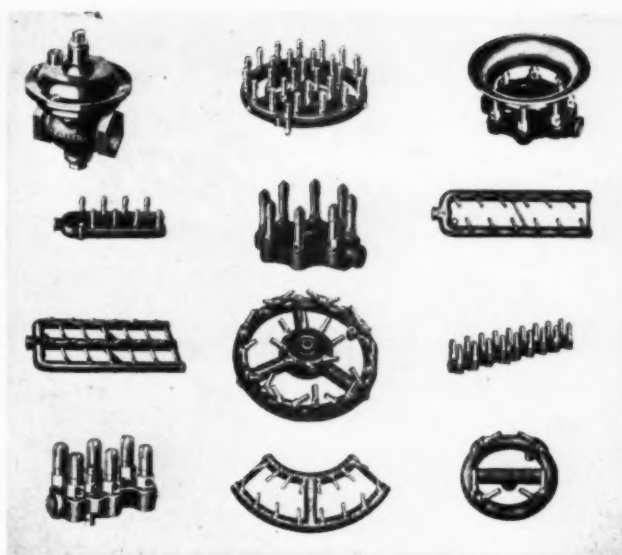
B-22 Motor

The B-22 Master Control Motor is silent — powerful — low in current consumption.

They are available now for your installations.

Specify and install "Master".
It is more than a name. It is a guarantee.

WHITE MANUFACTURING COMPANY
2368 University Avenue • St. Paul, Minnesota



BARBER Designs—As Well as Builds —All Types of Appliance Burners



Barber not only makes countless types of burner units for hundreds of gas appliance manufacturers, but also continually functions, for its customers, as a source of basic engineering assistance, and a testing laboratory for the design and development of these various burners. Starting from scratch, Barber can DESIGN and then produce the correct unit—in shape, size, jets, fuel capacity, and any special characteristics—to suit any individual appliance, no matter what its use or the type of fuel to be consumed.

Many leading appliance makers will have nothing else but Barber Burners, because they have learned from years of experience that Barber is best equipped to provide the utmost in operational efficiency and in freedom from headaches, needless expense, and consumer complaints. To get this kind of cooperation on YOUR burner problems, you have only to call on us. The superior quality of Barber Burners is always a favorable reflection on the merit of products which you make, sponsor or sell.

Barber, the pioneer specialist in the industry, freely offers its expert consulting and experimental services for your use, without obligation. Ask for Catalog on Appliance and Conversion Burners and Regulators.

THE BARBER GAS BURNER CO.

3704 Superior Ave.

Cleveland 14, Ohio

BARBER Automatic JET GAS BURNERS

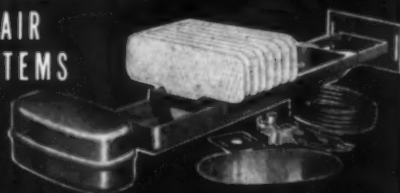
Be A Blower Dealer



Convert any gravity furnace into a modern forced-air heating plant with the Viking Blower Package. Engineered for quick, easy installation . . . quick, certain profits for you.

ANOTHER Viking PROFIT BUILDER

SERIES 1100 HUMIDIFIER
FOR FORCED AIR
HEATING SYSTEMS



A companion package that makes your conversion job a complete WINTER AIR CONDITIONING SYSTEM. Designed to fit all types of furnaces. Complete data in Bulletin 349.



Viking No. 11 KIT

AUTOMATIC WATER
PAN FILLER FOR USE
ON ANY FURNACE

A complete package. Carry one at all times. Quickly, easily installed. Helps make an inspection trip a profitable call.

Viking



AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

With the Manufacturers

Perfex Corporation of Milwaukee, manufacturers of automatic temperature controls, made several important appointments recently. V. Robins Tate, vice president and secretary of the firm, was elected executive vice president by the Board of Directors.



V. R. Tate

H. Kelley

C. J. Jensen

At the same time Hugh Keily became chief engineer and will be responsible for design, research and test of all control products as well as all product engineering. Chris J. Jensen, Sr., is now foreign representative and engineer for the company. His headquarters will be in Oslo, Norway, and he will work with European manufacturing accounts and on educational programs with the Perfex exporting agent.

Philip S. Morris is now assistant to the president of Mcquay, Inc., Minneapolis manufacturer of air conditioning and refrigeration equipment. He will be in charge of purchases, advertising and credit.

Blake Thomas became assistant general sales manager of Mcquay at the same time that Mr. Morris assumed his new post.

Air Devices, Inc., has recently acquired several new representatives for their air filters, diffusers, exhausters and gas generating furnaces. These are: Oscar R. Tolerton, 1837 Selma Ave., Youngstown, Ohio; R. E. Gardner, Richmond Drive, Nashville, Tenn.; and Irving M. Day, 718 Mills Building, Washington, D. C.

Paul R. Sellars is now manager of the Zanesville branch of the Robertson Heating Supply that is located at 310 North St. Robertson, a jobber, has its main offices in Alliance, Ohio.

Mr. Sellars had spent several years in the employ of Wheeling Steel and came to Robertson from the Berger Division of Republic Steel.

Bryant Heater Company of Cleveland, Ohio, held its 1947 annual sales conference in Tyler, Texas, so that the Bryant distributors would be able to see the new Bryant factory in production.

This new plant, built since last summer, is already in production and has provided a large increase in capacity for the company. New models of Bryant gas fired equipment, including hot water heaters and furnaces were displayed to the conferees.

NASMD Convention

(Continued from Page 88)

tant to reveal his actual cost. None was actually following the manufacturer's recommendation on resale prices and under the OPA the manufacturers withdrew their price concessions until all warehouses were buying at the schedule filed with the OPA. While the profit of the wholesaler dropped it was caused not by a raise in cost but by the withdrawal of special volume prices and none of the distributors wanted to reveal his former costs. When they did band together to seek price relief they were completely unsuccessful, perhaps partially because of their previous position.

The next situation that Mr. Thompson discussed was that in regard to the relationship between the steel mills and the distributor. There seem to be growing indications that the mills regard the distributor as a necessary part in the merchandising of steel and that recognition must be protected. The application of protective extras to the sale of galvanized sheets in less than carload lots should be the same as on hot and cold rolled sheets, according to the speaker. To accomplish this there must be a meeting ground where the mill will agree not to sell less than a carload of steel and the distributor will agree not to sell more than a carload of steel. The profit situation on carload sales by the distributor is such that an agreement of this kind could only result in a gain for him since he makes less profit by selling a carload of sheets than he could on sales of steel in much smaller quantities.

To conclude, the speaker indicated that the distributor should be as solicitous of his supplier's profit as he is of his own and that close cooperation is needed in the present market.

Material Handling

John Speck, The Tiffin Art Metal Company, Tiffin, Ohio gave the membership a thorough schooling in the way his company handles materials in the warehouse and plant. Mr. Speck told of the handling of steel sheets with an overhead system which ran the full length of the building, in 2½ ton lifts, just as received from the mills. These 2½ ton lifts were ordered to facilitate handling, and were stored according to gauge and size, so that manufacturing operations could be speeded up from the stored piles. Four wheel trucks handled the 2½ ton lifts from storage to manufacturing site and the overall efficiency was raised to a high degree.

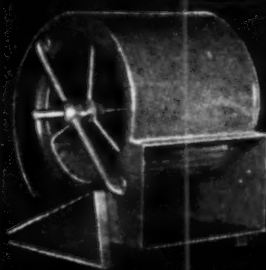
On the afternoon of the 27th the entire group were the guests of The American Rolling Mill Company, at the East Side Works in Middletown, where conducted tours of the mills were made after which dinner was served at the Manchester Hotel, Middletown.

On the evening of the 26th the annual dinner was held and Glenn Massman of The Foremen's Club of Dayton was the principal speaker with President Art Vorys as toastmaster.

The Fall Meeting of the National Association of Sheet Metal Distributors will be held in Atlantic City at a date to be announced later.

MANUFACTURERS!

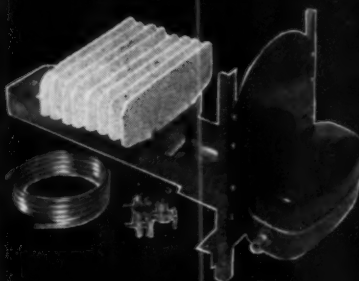
Viking EFFICIENCY



Puts Quality
in Your Furnace

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer could build or assemble yourself.

Viking Dependable Humidifiers Add Winter Air Conditioning to Your Furnace



SERIES 1300
FOR POPULAR
SIZED FURNACES

A complete float operated humidifier especially designed for small plenum installations. Incorporates the famous Viking Top Seat float valve for longer, trouble-free service under all conditions. Bulletin 349 contains complete data.

Write Today for
Viking
BLOWER CATALOG

Contains complete specifications on blower units for any size furnace at any capacity.



Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

NEWS SUMMARY OF THE MONTH

(Continued from Page 56)

The Department surveys indicate that only one in five theatres now have mechanical air conditioning installations; there are only a few hotels with cooling in guest rooms; all of this adding up, says the Department, to a tremendous market.

The department believes that proprietors of leased store spaces will not be anxious to invest in permanent central installations but will prefer to purchase the self-contained units of large or small capacity which can be moved, if necessary, or shifted according to conditions.

The Truman Doctrine

THE understanding is beginning to develop that if our nation's program of stopping the spread of communism is to be applied as required, it will take at least \$10 billions of dollars to do the job and the effect of any such gigantic expenditures are about as follows:

- 1—The Federal budget must stay high and this means continued high Federal taxes.
- 2—Steel will be hard to get since the United States will have to supply steel for many of the items required for the reestablishment of European economy.
- 3—There will be new and increased competition for the American customer's dollar in the way of foreign items being offered for sale here, many American dollars being spent on foreign travel, and a very appreciable percentage of American production being put into export of needed goods and materials.

The Unemployment Picture

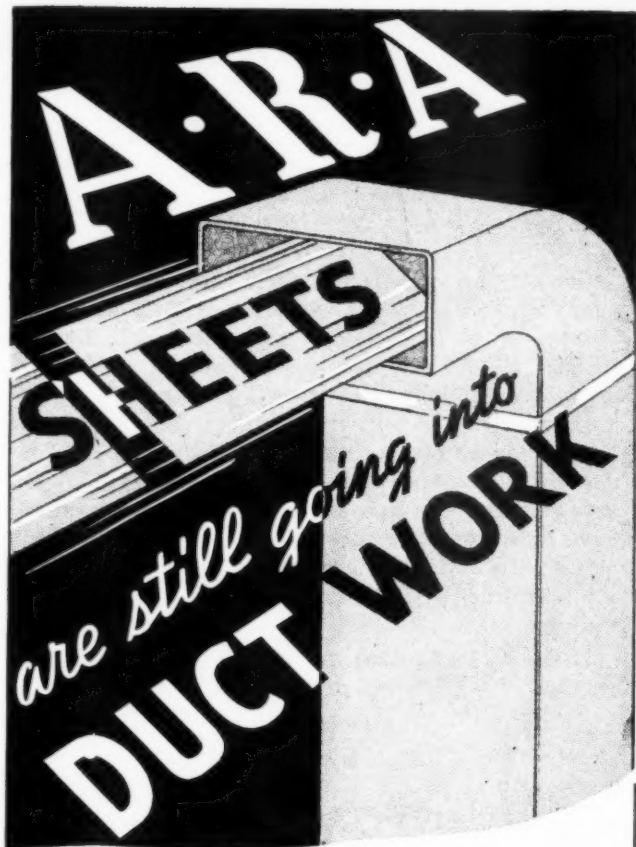
ONE of the most amazing features of the post-war situation is the way in which employment has been sustained, though millions of men from the fighting forces have been added to the country's gainfully employed. Even in a relatively prosperous year of 1940 there were seven million unemployed. While some additional unemployment is expected by certain economists before price adjustment finally is obtained, the same economists believe that the unemployment figure will not exceed four million persons. Of all the activities in which renewed and increased activity is anticipated the construction industry is the outstanding example.



★

Sheet metal men everywhere are turning out accurate work quickly and easily with Niagara machines and tools for shearing, blanking and forming sheet metal.

NIAGARA
MACHINE & TOOL WORKS
BUFFALO 11, N. Y.
District Offices:
Detroit, Cleveland, New York



PLAN YOUR DUCT-WORK AND GO AHEAD WITH IT! DON'T PASS UP BUSINESS! KEEP YOUR JOBS ON SCHEDULE! Keep an ample supply of these nationally known easy working sheets in stock for fabricating duct work of every type.

Asbestos clad A-R-A Sheets are tough yet flexible—rigid but not brittle—fire-proofed and moisture-proofed—will not dry out, crack, crumble or chip. A-R-A Sheets have a high insulating value (K. .45 B.T.U.)—good sound deadening properties—and they deaden metallic rattle.



CARTON CONTENTS

20 Sheets 33" x 48" Per Carton

SHIPPING WEIGHT

Approximately 100 lbs. per Carton

Here is the package of A-R-A Sheets that make it the most convenient to ship, stock or carry on the job. The Sheets are always clean and in good condition.

You can get Genuine A-R-A Sheets from Your Jobber—Order well in advance.

Write today for the free 16-page Illustrated Booklet No. 89-B.

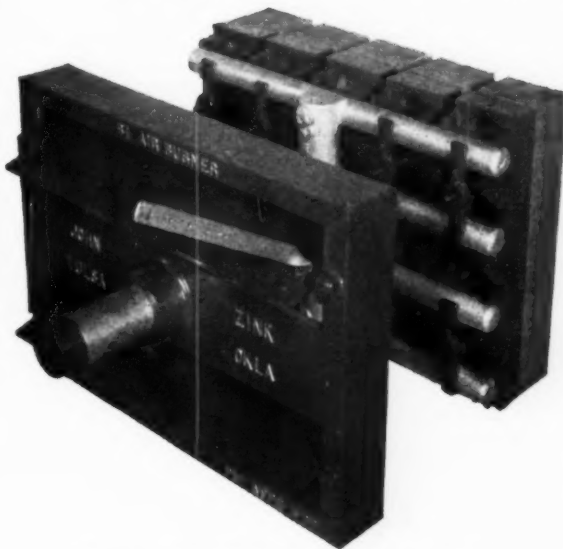
GRANT WILSON, INC.

141 WEST JACKSON BLVD. AT LA SALLE ST. CHICAGO 4, ILL.
122nd Floor, Board of Trade Bldg. Phone: Wabash 4220

JOHN ZINK

Refractory Type Bi-Air

BURNERS



for Industrial and Commercial Installations

For all types and sizes of HEATING BOILERS and small Power Boilers—JOHN ZINK offers the Series "R" Bi-Air short flame, Gas Burner with multi-jet burners, having refractory semi-venturi mixing throats, with a separate gas orifice to each throat. Capacities to meet your requirements.

Especially adapted for installing in boilers having very low draft and small combustion space.

— WRITE FOR LITERATURE —

John Zink Company

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TULSA, OKLAHOMA

New York - Salt Lake City - Houston - Los Angeles

New Labor Bill

AS this issue goes to press, the final version of the National labor bill awaits Presidential action. The big question is, will the president sign the bill or veto it? Washington seems to be betting that the president will veto the labor bill, but Washington is not decided whether or not the House and Senate will sustain the veto. It appears as though the House will override the veto, but the Senate is open to question.

As matters now stand, the president has signed the portal-to-portal bill, also signed the labor department appropriation bill; he may decide to sign the tax bill—all of this leaving the president in a sound position to veto the omnibus labor bill.

Whether or not the Senate overrides the veto seems to depend upon: (a) whether or not the Taft version is substantially altered in conference and (b) the president does or does not apply strong pressure on democratic senators to sustain his veto.

Under the Taft version of the labor bill, the National Labor Relations Board will consist of seven members (four new members to be appointed by the president), the closed shop will be banned but the union shop and other forms of union security will be left for regulation by the new National Labor Relations Board. Senator Taft believes that this form of bill will give the employer greater protection and will give the individual workers greater freedom in securing employment, also

protection against discharge as a result of expulsion from the union, and the right to work at appropriate times for the election of a new bargaining agent.

Under the Taft version for the first time unions will be chargeable with unfair labor practices including union coercion of employees in their choice of a bargaining agent; union attempts to discriminate against employees for dual union activity at permissible times; union refusals to bargain with an employer; participation by the union in jurisdictional strikes or secondary boycotts and labor violations of a collective bargaining agreement. Every agreement will, by law, include an automatic 60-day cooling-off period and unions would not be permitted to terminate or modify a contract without following certain notice, conference, and cooling-off requirements. Also under the Taft version, individual employees will have the right to present grievances to their employer and the employer will have the right to adjust such grievances without the active intervention of a contracting union so long as the adjustment is not inconsistent with the existing contract.

It is anticipated that the final result of this controversial bill will not be long in announcement.

Lumber Prices Decrease

ACCORDING to the National Retail Lumber Dealers' Association members from all parts of the country are reporting that inventories are rapidly in-



At top, the new series 6000. Built in one piece, in 10 and 12 inch sizes, you can take it in through the average size door. At right, the series 5000. Sectional construction permits access door to be placed on either side.

QUALITY IN BLOWERS ALWAYS MEANS FURBLO

There's never a worry about performance, steady air supply, or safety when you install Furblos. These superior blowers are products of twenty year's experience and we know they incorporate the features you demand.

Furblo blowers are equipped with long hour duty motors, rubber mounted, and meeting all power company requirements, Dustop filters, Minneapolis-Honeywell controls, variable speed belts, and automatic overload cut-out protection. Another important feature is the special wheel which will run at very low speeds to conform with NWAH & AC association ideas of having the blower in continuous operation on forced air systems. Furblos are ideal for continuous operation—they'll supply all the air needed at slow speeds, with quieter operation and less motor wear.

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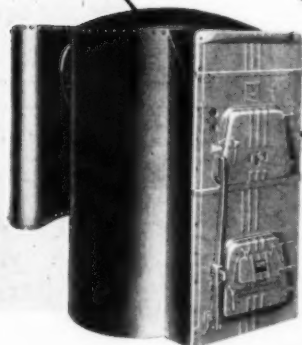
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dealers' requirements.

Get in touch with PREMIER regarding these
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PREMIER

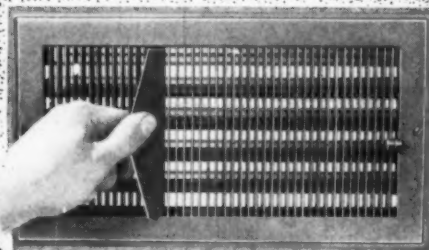
THE YEAR 'ROUND LINE

AMERICAN ARTISAN, June, 1947



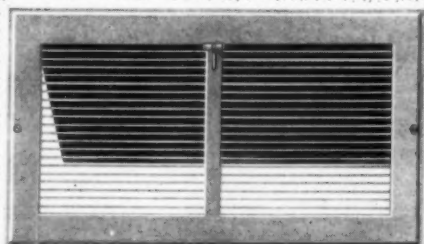
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UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

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creasing and that upper grades of flooring and finished lumber are flowing more regularly to building materials yards than in any time in recent years. All members agreed that such inventories were unbalanced inasmuch as finished lumber and flooring were being obtained in much smaller quantities than was common framing lumber; some areas reported an easier supply of finished lumber and upper grades of lumber at reasonable prices; but lumber producers are reporting that lumber prices can not return to prewar levels because of present high costs of production.

Of some interest is the report by the association of rejuvenated activity in the remodeling of old homes into apartments; several areas are reporting that financing institutions are not loaning money for new homes unless they can obtain a "completed" price; and some members are reporting that "customers at least want to see the inside of the house now before they buy it."

Editorial

(Continued from Page 51)

Legislation

As this issue goes to press, business is waiting to see the disposition of the tax bill and labor bill. Business men stand to gain some relief in personal income tax, if the bill is signed, but business tax savings of a substantial nature probably must wait for the Treasury's overhaul of the entire tax structure. The labor bill seems to be full of complications, requiring a labor

attorney to interpret. There will be several years of challenging by labor in the courts and it may be a couple of years before all the implications are thrashed out. For now, the procedure seems to be to study and adopt measures as they seem expedient.

Payroll Taxes

(Continued from Page 58)

totaled, and the total divided by 13. The entire list is then divided into 13 Parts, starting from the top. Each Part contains payrolls amounting to approximately 1/13 of the total state payroll.

Each Part is assigned a different rate, Part 1 receiving the highest rate (2.7%) and Part 13 the lowest rate (1.5%). The employer determines his rate by applying his "Part" to the schedule in effect for that year. If an employer's payroll falls into two Parts, he is assigned the rate for the lower Part.

Under a special provision, an employer who has had no compensable separations charged against his account during the 3-year period is assigned the lowest rate, even though his index does not place him in Part 13.

Rates go into effect April 1.

An employer who becomes liable for the tax must pay contributions at the standard rate, 2.7%, for the first 3 1/4 years. Then beginning with April 1, a merit rate is figured for each year if he has filed all reports and paid all contributions on wages through the preceding December 31 by March 15.

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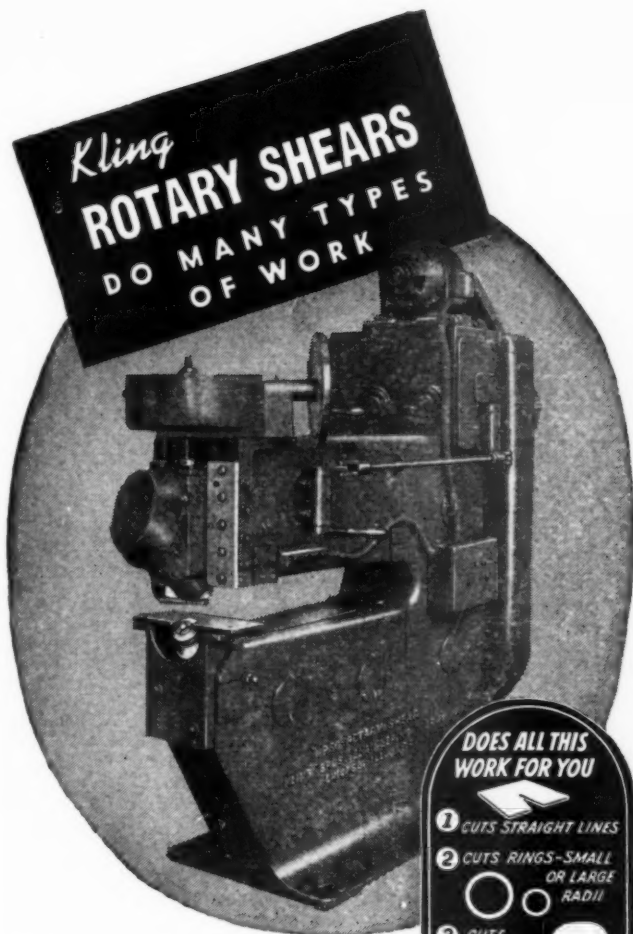
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Minimizing benefit payments by reducing turnover and contesting unjustified benefit claims will improve your rate standing. (Rates are unaffected by the duration of the benefit payments.)

Tax Credit Plan

New York

An employer's rate is fixed at 2.7%, but the amount of his tax may be reduced by assignment to him of a tax credit.

The tax rate for all employers is fixed at 2.7% but this may be reduced by a tax credit, the size of which is determined by the "surplus" in the state fund. Employers who have been paying tax for 3½ years on January 1, and who, by March 15, have made all reports and contributions on wages paid through December 31, are eligible for a tax credit on the next July 1.

In figuring the credit, the employer's "experience factor" and "credit class" are worked out. These are computed as of June 30, as follows:

1. *Annual factors.* The taxable payrolls (including wages up to \$3,000) for the 3 calendar years immediately preceding July 1 are compared by years. The amount of any decrease between years is divided by the preceding year's payroll. The resulting percentages (carried to four decimal places) are totaled, and points are assigned according to the following table:

<i>Sum of Decreases</i>	<i>Points</i>
Less than 0.1	12
0.1 but less than 0.2	10

0.2 but less than 0.3	8
0.3 but less than 0.4	6
0.4 but less than 0.5	4
0.5 but less than 0.6	2
0.6 or more	0

2. *Quarterly factor.* All wages (including salaries over \$3,000) paid in 3 calendar years immediately preceding July 1 are compared by quarters. The amount of any decrease between quarters is divided by the preceding quarter's wages. The resulting percentages (carried to four decimal places) are totaled, and points are assigned according to following table:

<i>Sum of Decreases</i>	<i>Points</i>
Less than 0.5	6
0.5 but less than 1	5
1 but less than 1.5	4
1.5 but less than 2	3
2 but less than 2.5	2
2.5 but less than 3	1
3 or more	0

3. *Age factor.* Points are assigned for each consecutive year during the whole of which the employer was continually subject, according to the following table:

<i>Years of Liability</i>	<i>Points</i>
8 years or more	5
4 but less than 8	4
Less than 4 years	3

The total of points for these 3 factors is the employer's "experience factor". On the basis of this factor, each employer is placed in a "credit class" according to the following table:

PEXTO . . . the oldest name in SHEET METAL WORKING

Here, at Southington, Conn., PEXTO has been making the finest Machinery and Tools for Sheet Metal Fabrication . . . since the close of the war for American Independence. In the traditional manner of New England craftsmen, we have developed a complete line . . . every type of equipment to make better products faster and at lower costs.

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Nozzle shield for trouble free service. A patented Nu-Way feature.

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NOT
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you need when
you fix a cracked
firepot with
FIRELINE

—and it is completely, durably renewed!



There's no need to dismantle the furnace, or wait for castings. The whole job can be done in a few hours. Fireline is a means of completely renewing the firepot—a high-quality refractory moulding material in moist, plastic form which forms a complete lining entirely around the inside of the castings. The fire bakes it into a durable, one-piece lining that withstands temperatures up to 3000 deg. F.—a far higher temperature than ever occurs in a domestic furnace.

You install Fireline easily and quickly through the furnace door. Just pound it into place with a hammer, then trim it smooth. That's all there is to it. There's nothing to mix, nothing to add. Fireline seals all cracks and holes in the firepot castings; stops leakage of gas, odors, soot into the building. Fireline also preserves firepots still in good condition and improves combustion efficiency by reflecting and radiating heat across the entire firebed.

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Ironset Asbestos Furnace Cement
—the high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, shrink, bloat, or blister. Makes your work more permanent. Try it on your next job and see how Ironset builds up your reputation for permanent, gas-tight work. You can't afford to use any cement but the best—and that means Ironset.



Fire-Hearth Castable—the ideal refractory for setting stokers, forming precast combustion chambers and baffle tile. Easily installed: Just mix with water, pour into place, and trowel smooth. That's all there is to it.



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FIRELINE
HEATING SPECIALTIES

Employer's Experience Factor

Credit Class

20-23.....	I
16-19.....	II
12-15.....	III
8-11.....	IV
4-7.....	V
3.....	VI

The second step in figuring the tax credit is determination of the amount of the surplus to be allocated to each employer. Each credit class is allotted that percentage of the surplus which its total payroll for the preceding year bears to the total payroll for all classes. The amount is further subject to an arbitrary "weighting" designed to favor employers with the best experience. Each employer then receives a share which bears the same relation to the entire amount allocated to his class as his payroll for the preceding year bears to the total payroll for his class.

In contrast to other state systems, the number of ex-workers who collect benefits has no direct effect on the amount of tax credit given. Turnover is immaterial so long as the separated worker is replaced by another earning the same or a higher salary. Indirectly, the amount of tax credit depends on turnover since the surplus in the state fund is affected by the number of benefit payments.

Under this system, the employer with a stable payroll or with an expanding payroll (as long as there are no retrenchments) reaps the greatest credit. Your payroll doesn't have to be absolutely stable to achieve the largest credit. If you have been paying tax for

4 years, you can still receive the largest credit amount if your annual payroll decreases total less than 10% and your quarterly decreases total less than 50%.

Recommendation

Check your bookkeeping system on treatment of: (a) pay period (an employer on bi-weekly basis who is on the borderline may receive a credit class change because one calendar quarter includes six while another includes seven bi-weekly periods); (b) bonus payments (which should be pro-rated over quarters to which they apply to avoid inflating the period in which they are paid); (c) commission payments (which may not be pro-rated and therefore should not be accumulated over a long period); (d) severance payments or wage increases (which may inflate your payroll so that you are penalized by a subsequent decrease).

How Benefits Are Charged

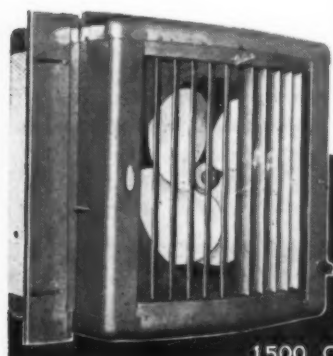
When an employee collects unemployment benefits, his former employer is "charged." This means that a certain amount is debited to his employer's contribution account. This debiting makes an employer's "experience" less favorable and thereby makes it more difficult for him to attain low contribution rates.

The methods by which "charging" is accomplished vary among the states as shown below.

1. *Base period employers.* When an eligible former employee files a claim for benefits, a "benefit year" and a "base year" are established for him. The "benefit year" is usually one year from the date of the claim. The "base year" is (approximately) the year pre-

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Handsome as a piece of modern furniture. Note the sliding metal panels that instantly "fill in" the space between cooler and the sides of window. Adjustable...fits any window from 24" to 34½" wide. Eliminates necessity of blocking out entire window with unsightly fill-in material. Easy to install: requires no outside supports or braces. Power and water switches controlled from inside of room.



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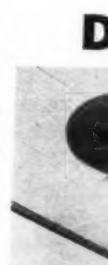
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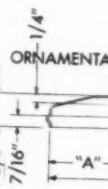
How to do you do we



Ceiling install. Diffusion Louvers through ring. Baked-on monizes with



Versatility of M ver is illustrated duct (above), slips over "sque attached with she



1-3/8" 7/16" 1/4" ORNAMENTA

DON'T DELAY AMERI P. O. BOX

How to dress-up your duct work...



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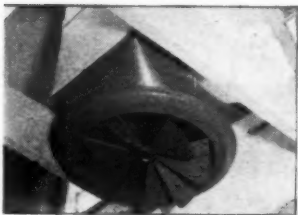
MARSALIS AIR DIFFUSION LOUVER



Ceiling installation is simple. Marsalis Air Diffusion Louver is attached here with wood screws through pre-punched holes in orifice ring. Baked-on gray wrinkle finish harmonizes with any interior!



Side-wall installation is similar to ceiling installation. Note streamlined, modern design of Marsalis Air Diffusion Louver. Made-to-order for today's market!



Versatility of Marsalis Air Diffusion Louver is illustrated by installation on exposed duct (above). Inner flange on orifice ring slips over "square to round" collar, is attached with sheet metal screws.

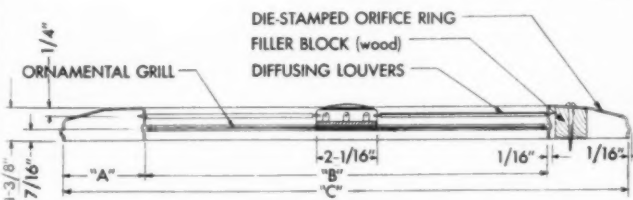
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SPECIFICATIONS

Model No.	Dimensions		
	"A"	"B"	"C"
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ADL 1847	2 1/2"	17"	21 1/4"



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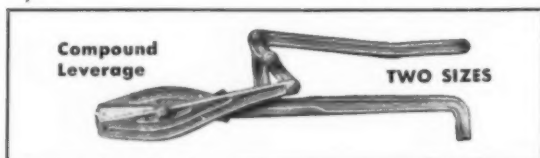
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ceding the benefit year. The earnings during the base year are used to determine the amount of benefits due the claimant during his benefit year. The employers for whom claimant worked during his base year are called "base period employers" and are charged with the amount of the benefits paid to claimant.

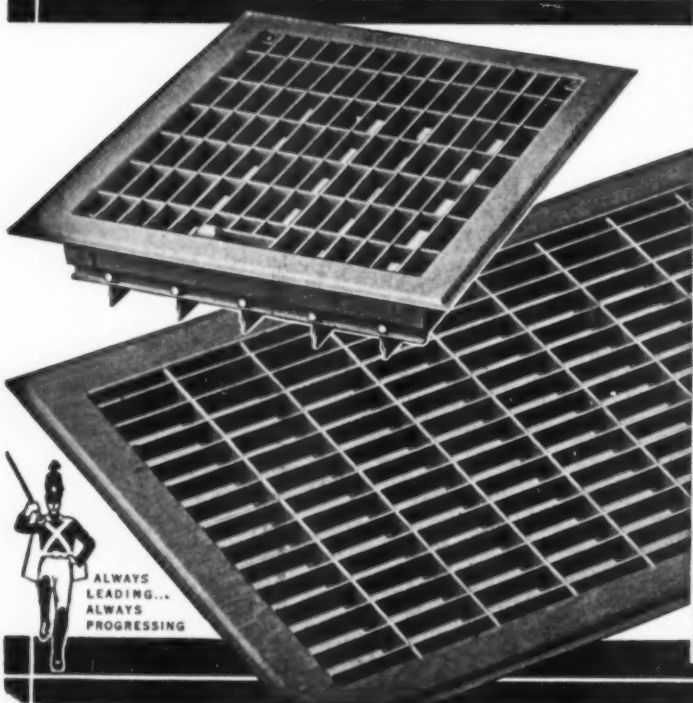
In some states base period employers are charged in *inverse chronological order*. In these states the most recent base period employer is charged first up to the maximum set by the statute, after which the next most recent base period employer is charged up to the maximum, etc., until the claimant stops drawing benefits or all base period employers have been charged to the maximum.

2. *Most recent employer.* When an eligible former employee collects benefits, his most recent employer (whether or not he is a base period employer) is charged with all the benefits paid to him.

3. *Credit week employers.* In Wisconsin, when an eligible former employee files a claim, a period of "credit weeks" is established for him. Each former employer is charged in inverse chronological order (i.e., the most recent employer is charged first up to the maximum set by the statute, then the next most recent employer to the maximum, etc.), with the amount of benefits paid to the claimant on account of credit week earnings paid by that employer. Two credit weeks are cancelled for each benefit payment.

Time of charging. Charges for benefit payments are made to an employer's account as of the year in which the benefits are paid, not as of the year in which the wages (on which benefits are based) were paid.

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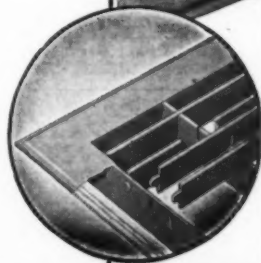
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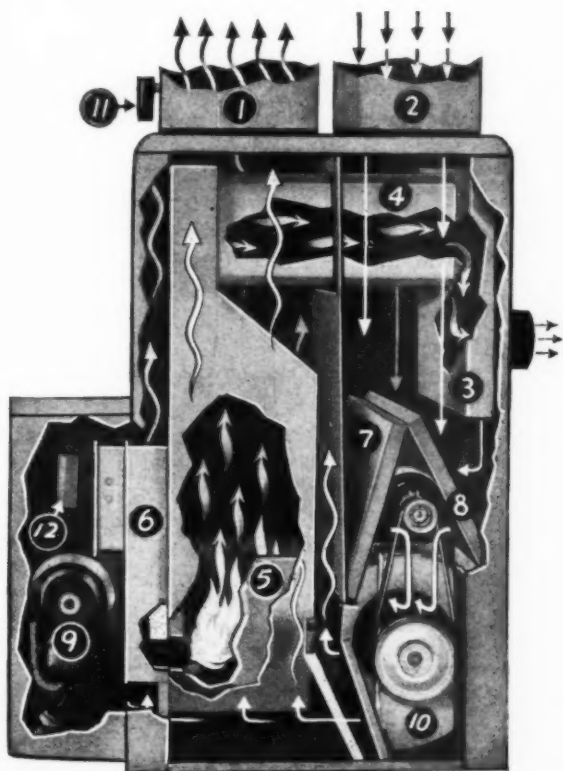
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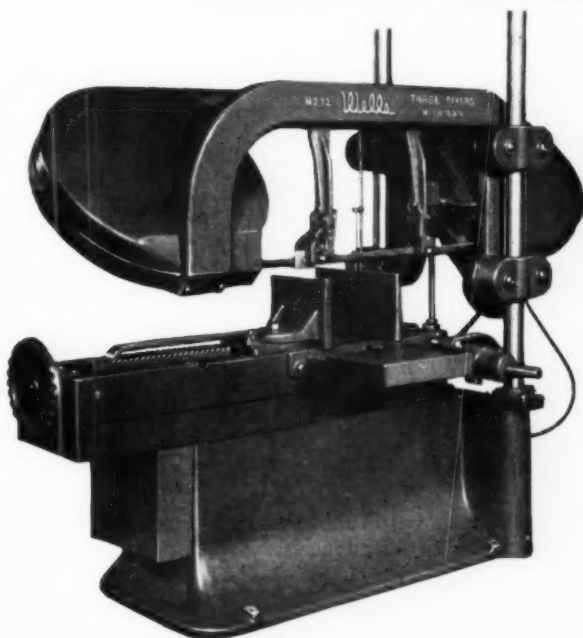
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- Blade is in horizontal position at all times.
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METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
1818 WILSON AVE., THREE RIVERS, MICHIGAN



Brundage BLOWER-FILTER PACKAGE UNITS

... Are outstanding in the field for — Sturdy construction
 ... Simplicity of Installation ... Quiet Operation ...
 Dependable Performance



Kruckman— Washington Letter

(Continued from Page 53)

ment will exceed the prewar peak by August. This interesting and optimistic document urges builders to keep in close contact with dealers who are familiar with the production schedules of manufacturers. Manufacturers are reported to either have recently moved into new plants, or to be in the process of expanding by erecting new plants. At the same time it is claimed prices have scarcely risen enough to arouse any consciousness of an increase. It is pointed out the present index is 117.1 compared with 100 in 1926, while the general building material index for the same periods is 141.5. Certainly this all sounds very happy and cozy. The Census report on the production of warm air furnaces gave the number in January of this year as an over-all production having a value of \$11,000,000, 74,032 in number, the same in value and number as those produced in December, 1946. Four-fifths were made of steel, the balance of iron. Solid fuel furnaces comprised 44%, gas-fired 38%, and oil-fired, 18%. The production included 57,525 floor and wall furnaces. A later report states that cast iron and convector radiation production will increase 25% this year. It is stressed, however, that production is still far behind demand. Department of Commerce released the statement that oil burners reached an all-time high last year with 580,326 units.

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.



Preloaded oil-proof cushion built into the bearing. Ball-and-socket design. Write for samples and complete information.

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET

OSHKOSH, WISCONSIN

You Can't Beat It!
for Health-Efficiency-Economy

FRONT RANK

WINTER AIR-CONDITIONING
UNIT



It Has Everything!...

Clean, healthful, uniform heat circulated throughout the home is what your customers will enjoy from this FRONT RANK Unit. Gives them extra home comfort—and you, added prestige.

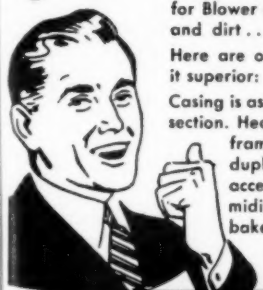
Note these features for economy:

Drum of heavy gauge boiler plate with crescent shaped Radiator. All shielded arc welded construction for longer life... Casing scientifically baffled for Blower operation—Dustop Air Filters catch dust and dirt... Blower automatically controlled.

Here are other features of construction that make it superior:

Casing is assembled without screws. Top piece in one section. Heavy steel front, with cast iron doors and frames. Waist high grate shaker. Rotary duplex grate. Large service door gives easy access to motor, filters, etc. Automatic Humidifier or Water Pan. Finish is beautiful baked on green enamel.

ORDER from YOUR JOBBER



FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS 4, MO.



Sheehan and Krech, Designers and Builders
Air Conditioning by Schwerin Air Conditioning Corporation

Simply designed air diffuser blends with interior

Provides complete air conditioning comfort
by eliminating drafts, noise, hot or cold spots.

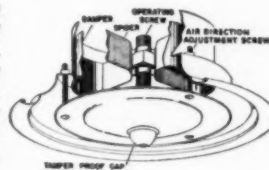
In addition to their unobtrusive appearance, Kno-Draft Adjustable Air Diffusers are specified for installations like the one pictured here in the offices of Schwarzenbach-Huber Co. because they combine all the advantages of scientific air diffusion plus adjustable features which assure positive air pattern control.

Kno-Draft adjustability increases efficiency and economy.

Diffusers improve occupant comfort by delivering conditioned air gently and thoroughly. Drafts and noise so often experienced with grilles, registers and other louvered devices are eliminated. Economy is increased. Diffusers handle greater air velocities and greater temperature differentials. This means less air volume, smaller, simpler ducts and fewer outlets.

To those advantages, Kno-Draft adds adjustment features that increase both the efficiency and economy of the air diffusion principle and a simplicity of design that blends with any interior.

Kno-Draft Direction Adjustment assures positive air pattern control by affording any angle of air discharge from vertical to horizontal that is needed to accommodate ceiling heights, individual or seasonal requirements. Volume adjustment is made with a patented damper that regulates the amount of air without affecting the velocity or diffusion pattern.



Pat. & Pat. Pending

Send for FREE handbook that simplifies the selection and installation of diffusers. Write Dept. J-14 on your letterhead.

W. B. CONNOR ENGINEERING CORP.

AIR DIFFUSION AIR PURIFICATION AIR RECOVERY

112 East 32nd Street



New York 16, New York

IN CANADA: Douglas Engineering Co., Ltd., 1405 Bishop St., Montreal 25, P.Q.

You Know at a Glance!



No guessing with AT-A-GLANCE. You know too, that they are guaranteed leak-proof — are "tailor-made" to fit all tank sizes and shapes — are sturdily built to withstand excessive pressure, and are fully Underwriter listed.

KRUEGER *Sentry* GAUGES

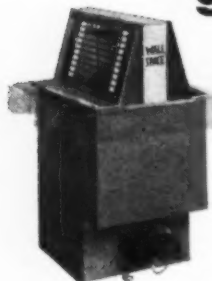
GREEN BAY • WISCONSIN

The total production of warm air furnaces for the first three months of 1947 is estimated at 220,000 units. Incidentally, there is much talk, but little information, here, about the successful use of radio waves for heating and cooking. Government is arranging wave lengths to apply to these facilities.

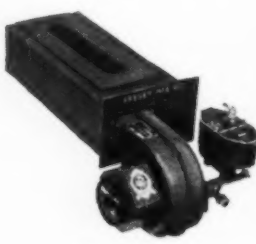
Spreading the "Suffering"

The recent decision of the U. S. Supreme Court, upholding the Interstate Commerce Commission, increasing certain "class" freight rates, hoists certain shipping costs in the Northeastern section and lowers them a like amount in the South and the West. It is a new principle of regulation, because it is based upon the economic condition of the territory served, rather than the fair earnings of the carriers performing the service. It is perfectly true the class rates charged shippers in the sparser settled South and West were higher than those charged shippers in what is technically known as Official Territory—all the region East of the Mississippi, and North of the Ohio and Potomac Rivers. In this Northeastern territory there is concentrated roughly half of the country's population, and, in dollar volume, nearly three-fourths of the country's business. Operation does not cost the railroads as much as operation costs in the other areas. The effect of the ICC ruling, and the U. S. Supreme Court approval, is regarded here as constituting the levy of a tribute on the people of one section for the benefit of the people in other sections. People of the Northeast-

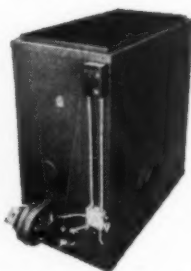
DEALERS—for FUTURE profits get lined up *Now* with KRESKY



FLOOR FURNACES



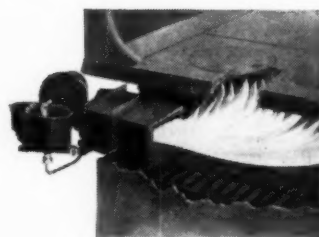
OIL BURNERS



FORCED AIR FURNACES



WATER HEATERS



RANGE BURNERS



Listed by Underwriters' Laboratories, Inc.
To Burn No. 3 Oil
(Diesel) or lighter

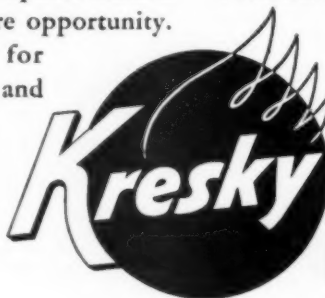
Wise dealers see in today's shortages the handwriting on the wall of tomorrow's profits. That's why so many are lining up now with Kresky, seeing in today's unprecedented demand a promise for future opportunity. ★ Always a money maker for dealers due to its versatility and

adaptability to a wide list of uses, the Kresky line includes Conversion Burners, Range Burners, Floor Furnaces, Water Heaters and Forced Air Units for small homes. ★ Delivery only to old customers now, but inquiries are invited from live dealers with an eye to the future.

KRESKY MANUFACTURING COMPANY

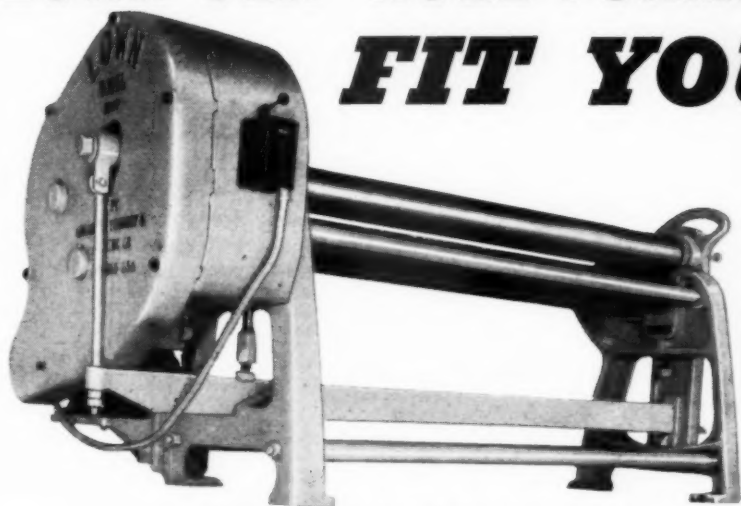
Pioneers in Oil Burning Equipment Since 1910

PETALUMA, CALIFORNIA



Oil
BURNERS

LOWN SLIP ROLL FORMING MACHINES ***FIT YOUR JOB!***



Model B-500 Series—5" diameter.

If you want MORE PRODUCTION and ECONOMICAL OPERATION, use LOWN Slip Roll Forming Machines.

Our machines are designed for sturdiness and ease of operation to provide peak productivity.

*Rugged — Rigid — Attractive
Prompt Deliveries.*

The LOWN Slip Roll Forming Machines are built in a range of sizes from which you can choose the exact unit for your requirements.

SAN ANGELO FOUNDRY & MACHINE COMPANY

San Angelo, Texas E. Upton & SFE Tracks

Distributors in Most Principal Cities — Write for Bulletins.

PUT THESE

Fisher Fixtures

ON YOUR EQUIPMENT

Hot Weather is coming! Many jobs will require glass filler faucets on equipment. Fisher glass filler stations and glass filler faucets are designed to meet strict requirements of the trade for Beauty, Durability, Safety, and easy installation. Write for new Catalog and complete information.

Makers of

Fixture Legs—Towel Bars & Rings
Sink Waste Sockets—Handles—
Pot Hooks—Dipper Well Out-
lets—Swing Spout Faucets—Sink
Stoppers—Overflow Bushings—Etc.

**AVAILABLE
FOR
IMMEDIATE
DELIVERY**

**WRITE FOR
NEW FISHER
CATALOG**

FISHER BRASS FOUNDRY

5332 SO. SANTA FE. • LOS ANGELES, CALIF.



WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE



NO. 9
UNIVERSAL
BUTTON PUNCH
CAPACITY
4 thicknesses of 24 ga.
DEPTH OF THROAT—
 $1\frac{3}{4}$ "
WEIGHT—10 lbs.



NOS. 1828, 1829, 1858, 1868
DEEP THROAT LEVER PUNCHES
THROAT HEIGHT, ALL SIZES—6"
CAPACITY, ALL SIZES— $1\frac{1}{2}$ " THRU $\frac{1}{8}$ "
ALL TYPES OF PUNCHES and DIES
AVAILABLE—Round, Square, Etc.—
FOR THESE LEVER PUNCHES.

Write for Catalog

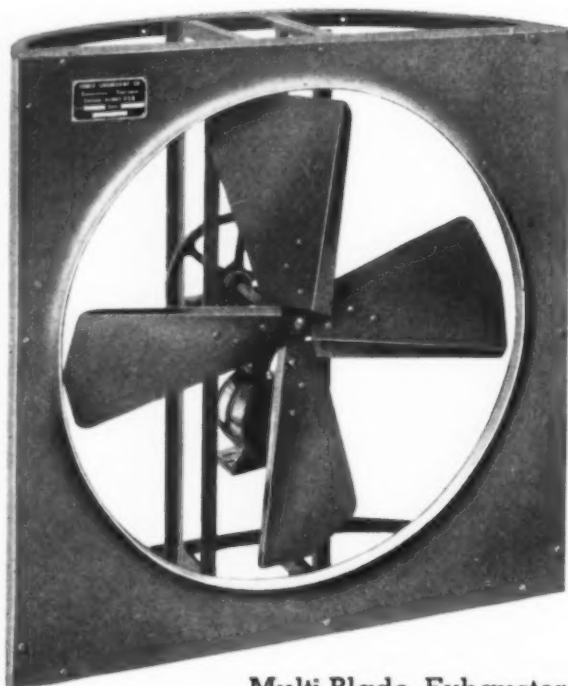
WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

ern States, in the Official Territory, will pay an estimated \$50,000,000 a year more in shipping bills for the social objective of giving some compensating economic advantage to the industrial South and West. Class rates apply chiefly to finished products. They account for 4% by volume and 6% by revenue of total freight shipments in the United States. There is some fear that this theory of "area equalization" may be applied to other forms of utility service.

Housing Notes

Limitations on construction are to be relaxed: 1,500 square feet will expand to 2,000 square feet. The one-bath limitation is out, as is the \$400 ceiling on repairs. Commercial structures will be increased from the \$1,000 limit to \$2,000 and \$2,500; the industrial limitation is expected to be politely disregarded. Non-housing construction will be increased 15% to 25%. The present rate of building is producing 700,000 housing units per year, 250,000 short of the number set as a goal. There is considerable hope here that this housing activity will grow and show an excellent total by the last quarter of the year. The chief bottlenecks are reported to be shortages of materials such as nails, gypsum board, lath, millwork, heating equipment, and plumbing fittings; shortage of building labor; and lack of investors willing to risk money at present high prices of material and labor. The wiseacres here predict a really monumental building boom in 1948 and 1949. They tell you to hang on to older homes—that they will increase in value. Despite adverse reports

Power Bilt ★ Industrial Ventilating Fans



Multi-Blade Exhausters

Catalog No.	Approximate Capacity CFM	Fan Speed RPM	Motor HP
C-36	13000	510	1/2
C-42	17000	420	3/4
C-48	28000	370	1

★ Attic Type Fans

A30	7000	490	1/4
A36	10000	405	1/4
A42	14000	305	1/3
A48	18000	255	1/2

Power Engineering Co.

361 East Ohio Street Chicago 11, Ill.

ELECTRIC MOTORS— $1/3$ — $1/4$ HP
CAPACITOR

INSULATION BLOWING MACHINES

Turbo Blowers Steel Plate Exhausters



Here's **CONSOLE-ation**
for Appliance-short Dealers



Pacific

THERMOLATORS
VENTED CONSOLE HEATERS

Now in Production!

They're here—the new Pacific THERMOLATORS. Beautifully streamlined in appearance, highly efficient in performance... the truly modern development in console heaters.

Every community needs Thermolators... for inexpensive gas heat in homes, stores, churches, motor courts, or remote rooms in larger houses.

Get full information of all the Pacific lineup of outstanding gas heating equipment. Includes: Console Heaters, Floor and Dual Register Furnaces, Winter Air Conditioners, Basement Gravity Furnaces, Suspended Units and Duct Furnaces. Dealer Franchises are open in a number of territories—write for full particulars today.

Gas Heating Specialists
for more than a third-of-a-century



Pacific Heater Division

NACO MANUFACTURING CO.

P. O. Box 310, Huntington Park, California

HERE IS YOUR DOMESTIC HOT WATER ANSWER

YEAR 'ROUND HOT WATER FROM THIS
INDEPENDENTLY OPERATED UNIT

YEMCO OIL BURNING
WATER HEATER

The Perfect COMPANION Unit
For Warm Air Installations

Easy to
Install

Quickly
Serviced

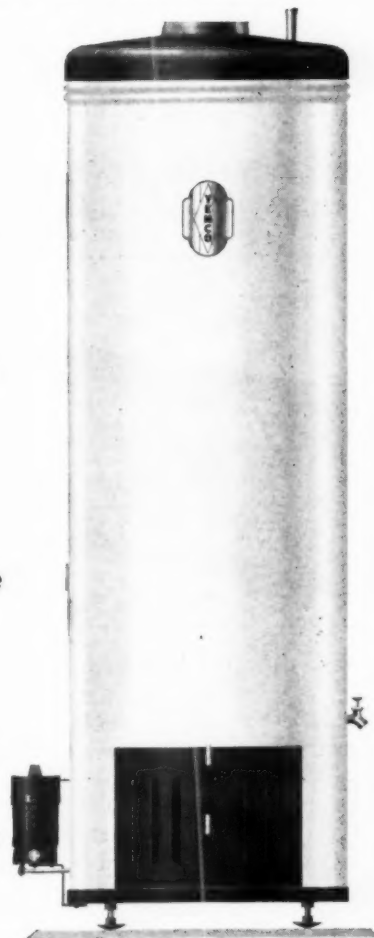
Fully
Automatic

Fine Jacket
Finish

Heavy Gauge
Tank

Smudgeless
Pilot Light

Underwriters
Approval



IMMEDIATE DELIVERY

Forty-four years of engineering and manufacturing experience guarantee quality construction and quiet, trouble-free, efficient performance.

YORK ELECTRIC & MACHINE CO.

34 N. PENN ST.

YORK, PENNA.

PEERLESS REPAIR PARTS

Available for immediate delivery

New furnaces cannot be furnished in sufficient quantities to meet present demand.

Order from Peerless today repair parts for all makes of furnaces and boilers. Also, fittings, registers, blowers, electric controls, and other warm air heating requirements.

If you do not have copy of our latest Parts Catalog, send for it today.

Pioneers in warm air heating equipment for almost half a century.

PEERLESS FOUNDRY COMPANY

1853 Ludlow Ave.

Indianapolis 7, Indiana

from some quarters, the usually reliable Bureau of Labor Statistics reports construction activity has increased 8% by work value, with 1,661,000 workers, representing the highest seasonal level since 1942. The gains were 70% in public utility construction; 19%, streets, and 26% highways; residential building, by private persons, was 50% higher; non-residential, 19% higher. Physical volume of privately financed new construction was greater for the past four months than in any year since 1939, the first year the Bureau of Labor Statistics recorded its studies. Home building is 50% greater compared to 1941, the prewar peak. Highway and street work jumped 45% from March to April, 1947. Public housing is the only activity in construction to show a recession, dropping 50% from January to April.

It is believed in the Capital that Congress will shortly arrange to permit veterans to cash their terminal leave bonds. It would put no burden on the Treasury. The GI could sell the bonds at par, possibly even for a premium on account of the interest rate. The liquidation of the vast number of bonds would undoubtedly turn loose much money and give business a shot in the arm. Some Congressmen wonder if the shot might cause over-stimulation—inflation.

This quotation from the recently published report of the 20th Century Fund, written under the supervision of Dr. J. Frederick Dewhurst, may be a good snapper with which to conclude this Letter:

"Far from being mature or dead, the American economic system is dynamic, growing. It holds possi-

There's no job too difficult for
FOLLANSBEE
SEAMLESS TERNE ROLL ROOFING



In fact, you can do a better job with FOLLANSBEE SEAMLESS TERNE ROLL ROOFING regardless of structural conditions or roofing specifications.

You can cut any desired length from the 50-foot rolls of Follansbee Seamless Terne Roll Roofing right on the job. And, it's easy to handle because of the uniform straight edges.

You'll find it advantageous to use Follansbee Seamless Terne Roll Roofing on your next maintenance or repair contract. Your Distributor is receiving periodic allocations of Follansbee Seamless Terne Roll Roofing—why not call him today?

Stocked, As Available,
by Leading Distributors



Follansbee Metal Warehouses

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES • PITTSBURGH 30, PA.

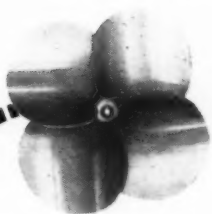
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada. Plants—Follansbee, W. Va., and Toronto, Ohio. Follansbee Metal Warehouses—Pittsburgh, Pa., Rochester, N. Y., and Fairfield, Conn.

ELECTRICAL SHEETS • POLISHED BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING • COLD ROLLED STRIP

**IT'S
BALANCE
THAT MAKES
A PROPELLER**



Pat. Applied For



A FAN is no better than the balance of its blades. Full air volume—quiet operation—smooth running—long life... all depend upon how well balanced is the blade.

Burden Blades are scientifically balanced—by an entirely new and exclusive electronic balancer perfected by Burden engineers. All guess work is eliminated. Any dynamic or static vibration is corrected by means of the Burden balancer before each propeller leaves the assembly line.

When you use Burden Blades, you use *balanced* blades that give the utmost in efficient operation with less operative horse power.

*Write Now for
New Burden Literature*



burden COMPANY

1000 N. ORANGE DRIVE, LOS ANGELES 38, CALIFORNIA

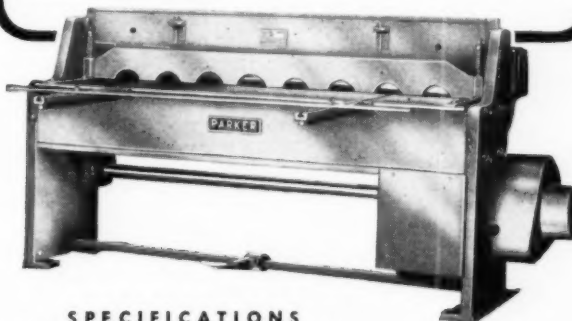
Canadian Representative: **SILVER BROTHERS CO.**
7-11 Mary Street Hamilton, Ontario

PARKER

**announces a new 10-GAUGE
POWER SQUARING SHEAR**
of EXTRA HEAVY STEEL PLATE CONSTRUCTION

MODEL 1072
10 Ga. Capacity, 6 Ft.
Cutting Length Com-
plete With 5 HP Mo-
tor, 30 Day Delivery.

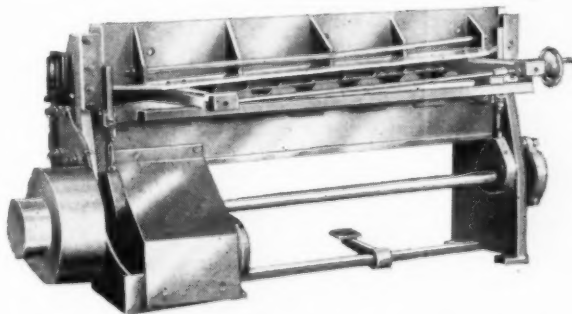
MODEL 1072 is a big brother to the Parker 14 Ga. Shear and is built with the same fine workmanship, the same all steel welded construction that gives Parker Shears a lifetime of dependable service. Compact, box type design of extra heavy steel plate, Model 1072 is stronger and heavier throughout for heavy duty shearing and long life. Parts are normalized after welding to relieve stresses. Breaking point of steel is three times that of cast iron, hence Parker Shears are equal in strength to machines many times their size. Note the low center of gravity and the economy of floor space. Deep drawn or folded objects may be trimmed within 1½" of shoulder. Oil hardened tool steel, four-way blades reduce time lost for grinding. Parker Shears are sold with a warranty against defects. 30 day delivery on Model 1072 and immediate delivery on Model 1472.



SPECIFICATIONS

MODEL	1072	1472
Capacity, mild steel .	10 Ga.	14 Ga.
Cutting length (Max.)	73"	73"
Blade length	75"	75"
Upper blade slope .	¾"	¾"
Back gauge range . .	18"	18"
Front gauge range . .	38"	38"
Strokes per min. . .	85	85
Motor (3 phase) . .	5 HP	2 HP
Height	47"	47"
Floor space	32"x104"	30"x102"
Wgt. (Approx. lbs.) .	4250	2850

*Back View
of Model
1072*



For complete information on *both* of these shears, write

PARKER
MANUFACTURING COMPANY
2200 Colorado Avenue
Santa Monica 4, California

LINE UP NOW WITH ECON-O-COL STOKERS



... to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

ECON-O-COL
COAL BURNER



ECON-O-COL

The "Stronghearted" Stoker

BUILT BY COTTA TRANSMISSION
COMPANY • ROCKFORD, ILLINOIS

bilities for capital expenditures; for starting new businesses, for producing such capital goods as new factories, stores, new school buildings, new hospitals, highways, railroads and transportation systems, etc. ... for so vast an area that still greater expansion lies beyond in the future."

Attic Ventilation Code

(Continued from Page 72)

as protecting the user from a burned-out motor due to overload.

10. INSTALLATION AND OPERATIONAL SUGGESTIONS

Oil motor and fan bearings according to manufacturer's direction card. When fan is first installed, check all bearings for lubrication.

Check rotation of fan and examine belt for tension and alignment.

Before starting fan, be sure that a door or window to the outside is open. The fan will pull soot down a chimney if there is no other way for the air to get in.

When fan is first operated, check for noise such as loose parts in fan and suction chamber as well as loose floor boards on attic joists.

After the first few weeks of operation check fan belt for tension and adjust if necessary, in accordance with manufacturer's instructions.

A thorough yearly inspection and oiling is recommended.

Change
MINUTES
to SECONDS
with

Riverside Pittsburgh "DUO-LOCK" Machine

Locks that used to take several minutes can now be formed in just a few seconds with a Duo-Lock. Forms Pittsburgh Locks, Double Seam Locks, Right Angle Flanges and Drive Cleats, and can be set up for two forming operations at one time. No adjustments are necessary for the different gauges making it possible for an inexperienced operator to work this machine which simply plugs into an ordinary light socket.

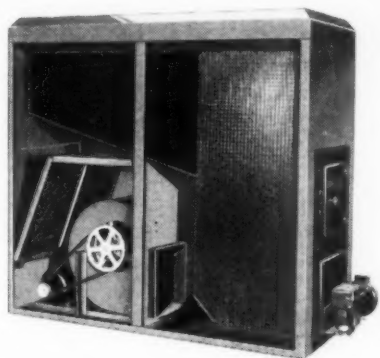


RIVERSIDE MACHINERY COMPANY

Shakopee

Minnesota

Insist
141 W. JACK



You have been looking for an oil or gas furnace, with a good profit margin, that can be sold at a price your customers can pay.

HERE IT IS IMMEDIATE DELIVERY

Write for particulars.

AUTOMATIC FURNACE COMPANY
1111 Race Street Lansing 5, Michigan

VAPOR-OIL
CLEAN - AUTOMATIC - ECONOMICAL

**LEAKY SHIPS
SINK
LEAKY FURNACES
STINK**

C
ZONE
*Protection
with
Grant Wilson*
FURNACE CEMENT



Get extra protection in the "combustion zone" with Grant Wilson Furnace Cement—expertly prepared, blended and compounded—using the finest materials known to science. Make your "C Zone" gas tight and smoke tight with this easy to apply high quality acid proof furnace cement. Write Grant Wilson, Inc., today.



Insist on it *Your Jobber has it*
141 W. JACKSON BLVD. CHICAGO 4, ILLINOIS

**The Heated Air Takes
a Bath in the ...
Zephyr.**



Patented Wing Deflectors
and Pan Construction.

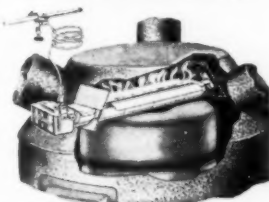
Yes, Mr. Dealer, you can really "go to town" selling this Maid-O'-Mist Automatic Zephyr.

It's priced **RIGHT**—and has sales features galore!

Patented wing deflectors speed up evaporation and give extra large capacity. Bronze, corrosive-resisting construction insures years of service.

Start today on the road to **EXTRA PROFITS** by writing us for complete data on Maid-O'-Mist lines, or see your jobber.

**OUTSTANDING
AUTOMATIC
HUMIDIFIER**



Showing completed installation of a "ZEPHYR" Bronze Humidifier in a sloping plenum furnace.

MAID-O'-MIST INC.

3213 N. PULASKI RD.
CHICAGO 41, ILLINOIS



"Made-Rite"

DUCTS



**SMOKE
PIPE**



**FURNACE
PIPE**



**FURNACE
FITTINGS**

You can save yourself time and money and make certain of well-tailored installations by contacting us for your pipe and fitting needs.

We are proud of our reputation and we want to help you fill your requirements with precision fittings ... **MADE-RITE**. A postcard to us will bring you more information.

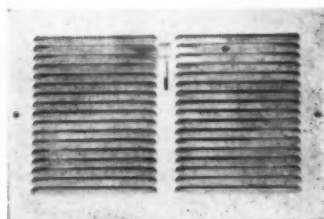


"Made-Rite" Co., Inc.
10th & Monroe St. Newport, Ky.



FORCED AIR REGISTERS and GRILLES

Sidewall and Baseboard
Four Sizes
8x6 - 10x6 - 12x6 - 14x6



**PERFORATED METALS
FOR EVERY INDUSTRIAL USE**

WRITE FOR COMPLETE CATALOG



Brotherton—

Exhaust Systems

(Continued from Page 78)

At Ryan Aeronautical Company, they have found that successful design of exhaust systems is largely a matter of estimating resistances. Underestimated resistance means restricted flow and overestimated resistance means increased flow, excessive power and possible over-loading of the blower motors. Velocities in pipes should be balanced to be high enough to maintain solids in suspension and low enough to minimize friction. Friction losses for round pipe can be determined by the formula:

$$x = .0000747 \frac{f V^2}{D}$$

Where: x = friction loss per 100 feet of round pipe
(inches of water)

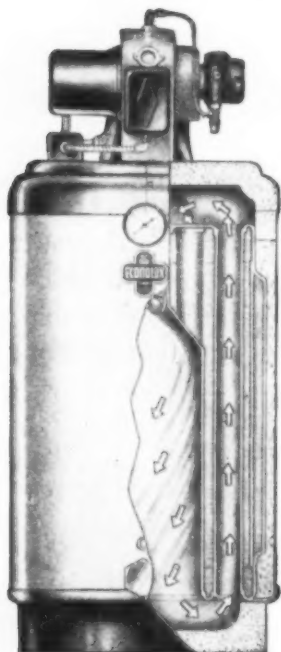
f = friction factor

v = average velocity in pipe (feet per min.)

D = pipe diameter (inches)

Friction losses for rectangular piping may be found by finding the loss in an aerodynamically equivalent round pipe. A rectangular pipe is frictionally equivalent to a round pipe when the velocities in both are the same and the hydraulic radii are equal. (Hy-

A "midget" that does a whale of a two-way heating job!



JOHNSON'S *new* ECONOLUX

**supplies abundant Heat
and ample faucet Hot Water
for a 10-room home!**

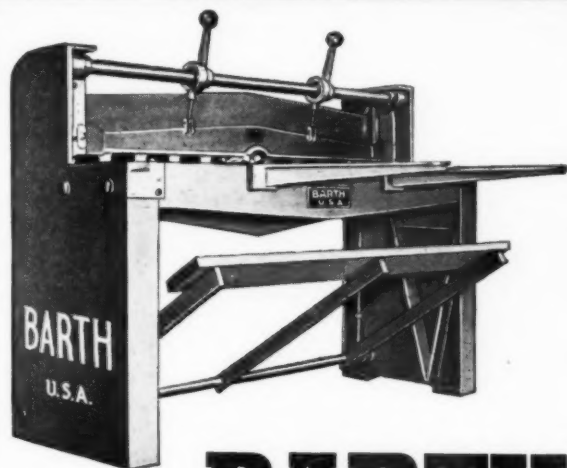
This amazing "midget" is making lots of new friends among both users and sellers. In spite of its compactness (it's only 24"x60" in size) it generates 150,000 B.T.U. output total... all the heat a good sized home in a cold country can use—and from a separate, outer-jacket compartment, it supplies automatic, day-and-night hot water as well.

Homeowners are delighted with its capacity... and amazed at its low fuel-consumption and efficiency. If you need an automatic heating-and-hot-water unit for domestic use... you ought to check up on the performance and the cost of this new Econolux.

It's easy to sell. And easy to install. It comes to you all "packaged" and ready to hook up to water, power and flue lines. When you install an Econolux you make a good profit... and you're apt to make a good friend.

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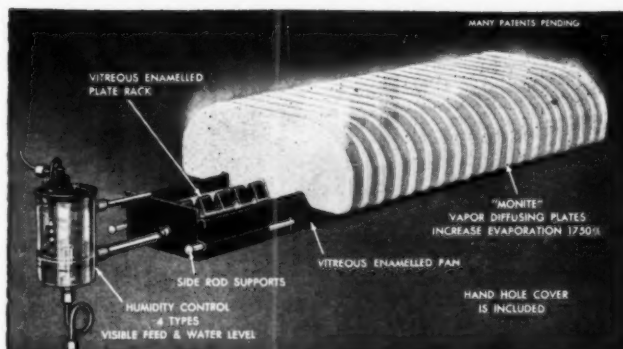
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WHITNEY LEVER PUNCHES

No. 4B PUNCH



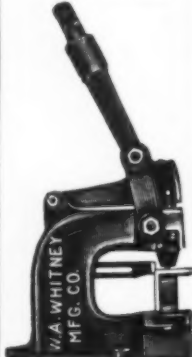
Length $8\frac{1}{2}$ inches. Capacity $\frac{1}{2}$ -inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies— $1/16$ " to $9/32$ " by 64ths.

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Length— $26\frac{1}{2}$ inches. Capacity— $\frac{1}{4}$ -inch hole through 3/16-inch iron; especially adapted for button punching or temp-lat work. Punches and dies $\frac{1}{8}$ " to $9/32$ " by 32nds.

No. 91 PUNCH



CAPACITY

$\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron; $\frac{3}{8}$ -inch hole through 3/16-inch iron; 2-inch hole through $\frac{3}{4}$ -inch iron. Depth throat, 5 inches. Weight, 82 lbs.

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Length—23 inches. Capacity—5-16-inch hole through $\frac{1}{4}$ -inch iron. Punches and dies in sizes 3-32" to $\frac{1}{2}$ -inch by 64ths.

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Companion to No. 2 Punch. Every part of the two punches interchangeable, including punches and dies. Capacity— $\frac{1}{4}$ -inch hole through $\frac{1}{4}$ -inch iron.



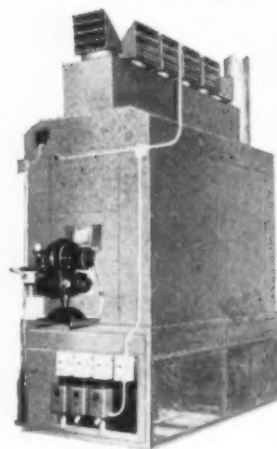
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draulic radius is the ratio of the cross-sectional area to the perimeter of the duct.)

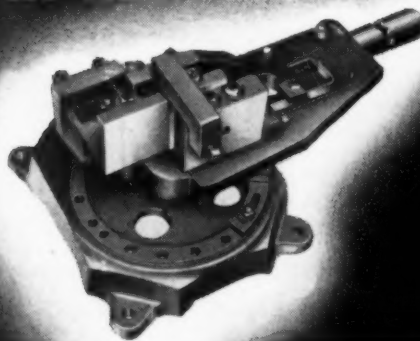
In order to properly design a pneumatic exhaust system it is necessary to compute the following factors:

- Static suction at each hood
- Air volume entering each hood
- Volume rate of flow in each pipe length
- Velocity in each pipe length
- Total air volume to be handled by the fan
- Static suction and back pressure at the fan inlet and outlet respectively.

The presence of solids in suspension in the system has little effect upon the friction losses or power consumption. Since the pressures required for exhaust systems are relatively low (being in the neighborhood of 6 inches of water above or below standard air pressure), design assumptions may be based upon the premise that the air is non-compressible. Only slight errors can ensue from this course. Other variables such as temperature, humidity, pipe diameter and pipe roughness can combine to produce considerable errors in performance estimates.

There is a good analogy between aeronautics and exhaust system flow. When fluids flow through a pipe at slow velocities they follow a predictable path which is rather straight and in general conformity to the pipe lines. However, when higher velocities are reached, the fluid character changes and swirling eddies form. This turbulence affects the flow materially and creates considerable resistance to it.

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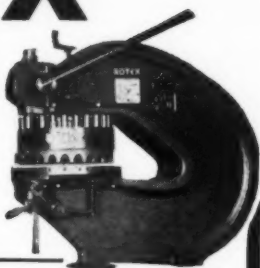
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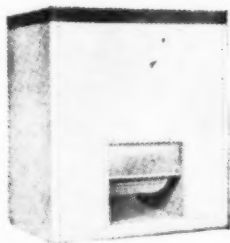
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motor mounting keeps the motor well away from the floor moisture. The cold air return can be readily fitted onto the top of the unit.

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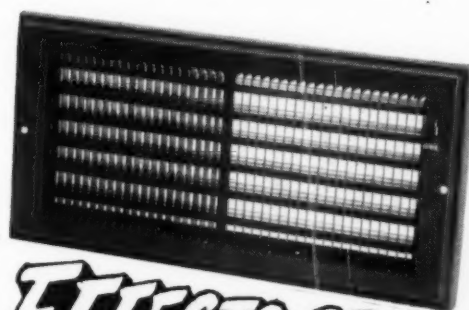
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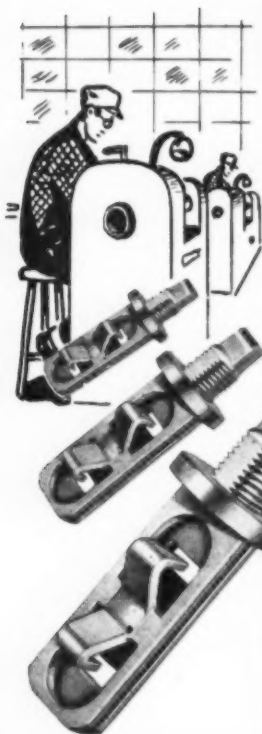
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At velocities of about 1100 feet per second (far beyond exhaust system requirements) another change in flow character takes place and the air becomes compressible. These changes are very similar to those which transpire in smooth and turbulent air flow over the wing of an airplane.

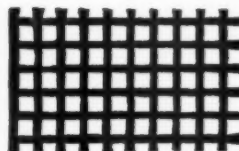
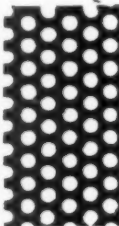
The exhaust system designer will, therefore, do well to avoid turbulent flow insofar as that is possible. Several types of construction of exhaust system components contribute to turbulence and should be carefully analyzed. Right angle, or boot entries, are offenders in this respect and short radius elbows with abnormal depth produce turbulence which acts as a drag on the air volume.

Round piping is the most efficient shape for exhaust system use. Square piping is next best with its efficiency decreasing as the aspect ratio (width divided by depth) increases. On tests made with air velocities of from 500 to 3300 f.p.m. the orifice which produced the least resistance was a round type with an addition of 12 inches of straight pipe. The use of the additional 12 inch section of pipe tends to straighten out the flow and is valuable when used with elbows which create turbulence.

Elbows should have large radii to encourage turning of air streams with a minimum of resistance. Turn blades within an elbow turn air streams in straight lines and prevent the flow from becoming disorganized and impinging against the sides. Actually, the turn blades create several elbows of larger aspect ratio within the one elbow and have a very beneficial effect if they are not made too long. Then, abnormal skin

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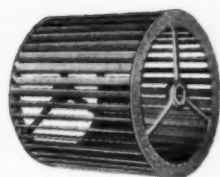
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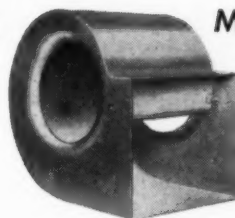
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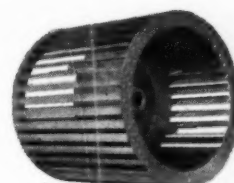
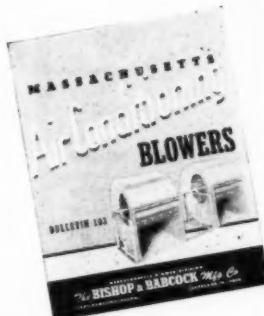
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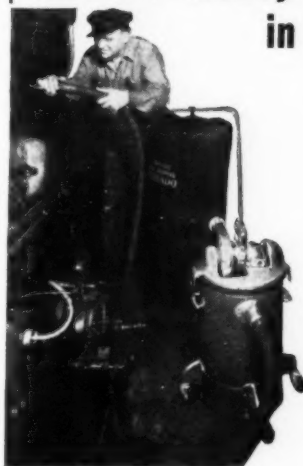
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You can put furnace cleaning on a money making basis by using a Grand Rapids Furnace Cleaner. High velocity suction scoops up all deposits of soot, ashes and carbon, cleaning the heating plant and re-establishing full efficiency. Special attachments clean flues, radiators, right angle turns and other hard-to-reach areas. The job is done quickly and completely. Customers are highly satisfied.

The Grand Rapids DeLuxe Furnace Cleaner is also your "in" for more than cleaning profits. By checking over and inspecting the heating plant as you clean it you are in a position to make timely recommendations for new equipment or repairs. This means better service for customers . . . more profits for you.

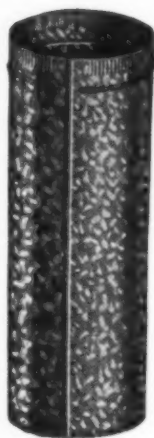
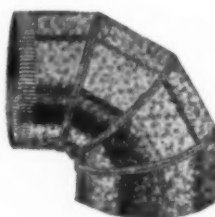
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friction in the heels of the turn blades may defeat their purpose. By simply changing round heel elbows to square, an increase of 10 per cent in efficiency is realized due to the reduction of friction.

The aspect ratio of elbows is an important feature which contributes to their effectiveness. There is a reduction of flow of 2 per cent when you go from an elbow which is square to one which has an aspect ratio of 1 to 2. And, if the duct is four times wider than its depth, the loss in flow will be 7.7 per cent because of the greater congestion.

Duct efficiency due to aspect ratio must be averaged with elbow efficiency to determine the all around efficiency of an elbow. Research shows that a radius over depth ratio of 5/3 is very desirable (where radius is measured to center of depth and would be $5/3 = 1.66 \times \text{depth}$). To find the most desirable throat radius of an elbow with a depth of 15 inches, multiply 15 by 1.66 and subtract one-half of depth (7.5) to equal 17.5 inches.

Because of these characteristics, flat turn elbows (high and narrow) produce tremendous flow reduction losses while bucket turns have good efficiency. Elbows which have both high aspect and radius ratios are at least 100 per cent more efficient than the flat bend type.

To find the design of an elbow producing the least friction and turbulence with the least power consumed at a flow velocity, a simple test can be made: Paint the inside of the duct with lamp black and oil, turn the air stream into it for a given time and velocity sufficient for the pressure of the air to impress itself upon the paint solution. Cut the air off with a clapper



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For the first time—air capacities, air deflection and control on each type of unit are clearly explained and *illustrated*. This *one* catalogue lists R & G's complete line of all types of Registers and Grilles for air conditioning.

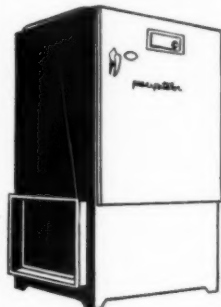
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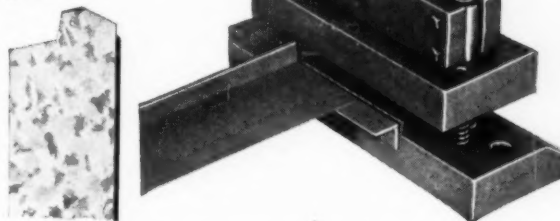
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THE THOR GOVERNMENT CLIP DIE

SAVES TIME
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This bench model hand-operated government clip die is designed to speed up work in all sheet metal shops doing heating and ventilating. It cuts 18 gauge metal or less and punches a hole for 2 1/2 lb. rivet in one operation with very little effort. Made from oil hardened tool steel, the die sections will with care stand up for 50,000 clips or more before resharpening. Rugged construction and hardened leader pins keep the die in perfect alignment. The Thor Government Clip Die is a high grade precision tool. Furnished with a 48" guide for support of metal when shearing. Shipping weight—65 lbs.

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HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

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damper and allow the paint streams to dry. Then fill the duct with plaster of Paris. When this has hardened, remove the duct model and lacquer the plaster mold. This will provide a permanent record of the air stream characteristics in the elbow at that velocity which will prove valuable in determining elbow efficiency.

In estimating the amount of material required for duct work, two convenient formulas are used at the Ryan Aeronautical Company:

Weight of round piping = length in feet x diameter in inches x R

Weight of rectangular piping = length in feet x 1/2 girth in inches x M

Where R = weight per square foot x the constant 0.288 and M = weight per square foot x the constant 0.19

These formulas include a waste allowance of 10 per cent for round piping and 14 per cent for rectangular ducts. The most commonly used duct material, galvanized iron, weighs 480 pounds per cubic foot. Therefore a sheet 1 inch thick and 1 foot square would weigh 40 pounds and a sheet 1 foot square which weighed one ounce would be 1/640 inch thick.

After a well-designed exhaust system has been constructed and placed in operation, regular maintenance checks should be inaugurated to insure the efficient functioning of the system. A complete drawing of the facilities will be very helpful in carrying out this maintenance inspection.

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leads the
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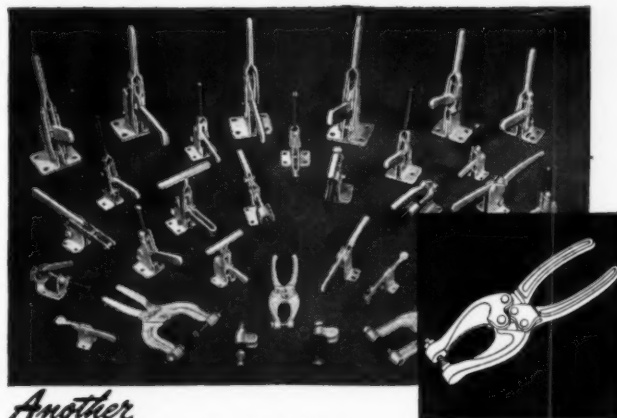
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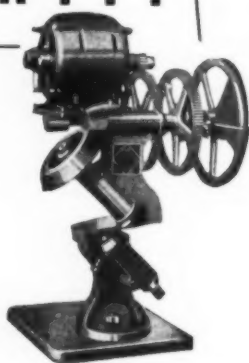
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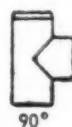
operation of an industrial exhaust duct network are: (1) infiltration caused by holes worn through pipe walls, broken seams, joints and disconnected piping from machine hoods; (2) closing or partial closing of dampers which are located in branch lines; (3) slipping fans and blower belts which will result in reduction of blower speeds; (4) clogged collectors and clogged piping causing reduced flow and increased resistances; (5) worn blower wheel or housing and corroded fan interiors and (6) poor electrical connections or service to fans causing reduced blower efficiencies.

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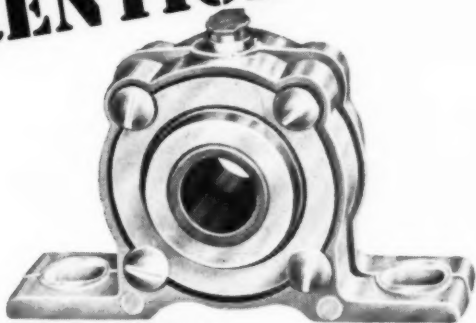
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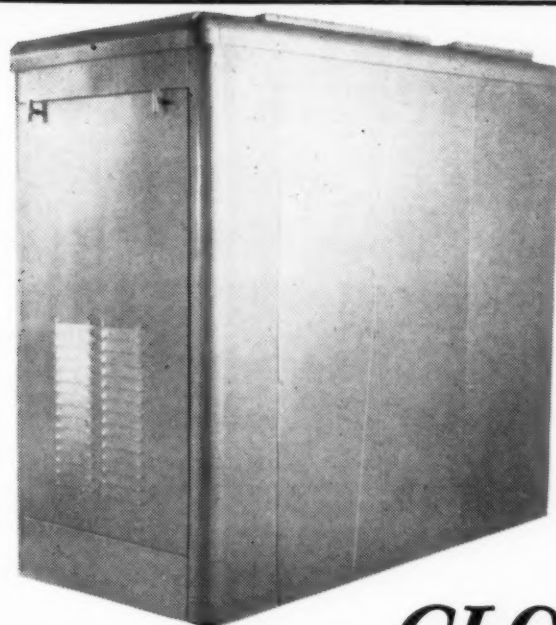
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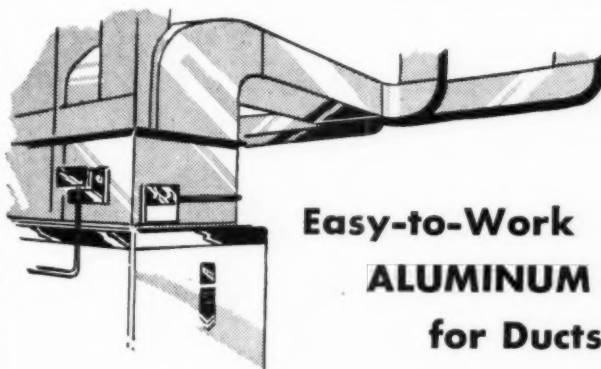
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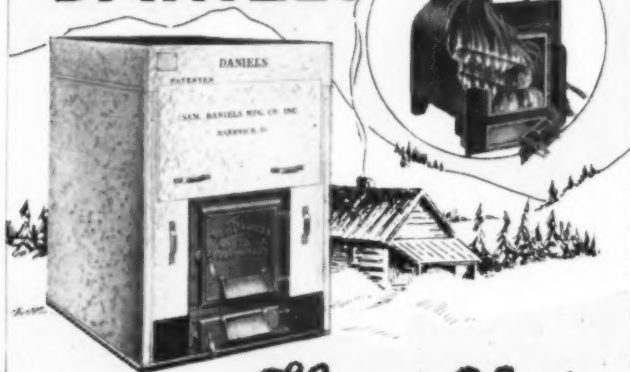
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(Continued from Page 82)

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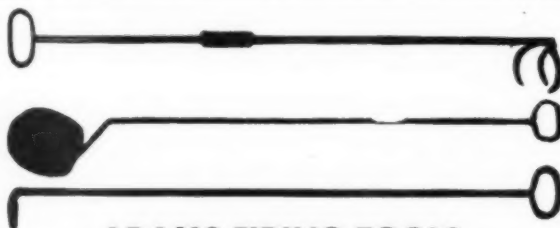
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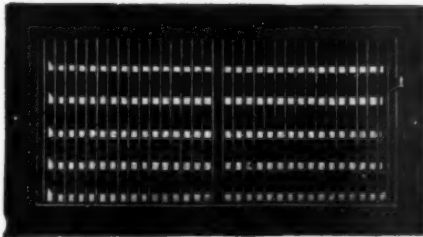
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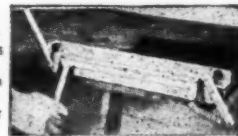
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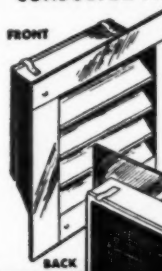


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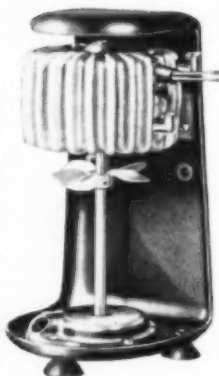
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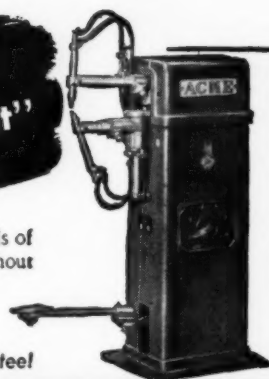
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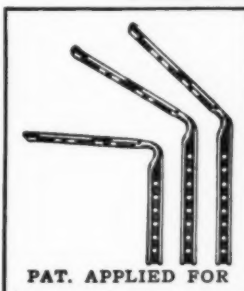


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HEAVY DUTY STEEL
STOKER FURNACE
TOPS ALL PAST
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For Any Make or Type
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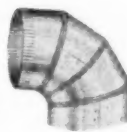
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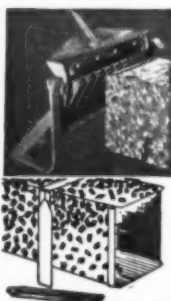
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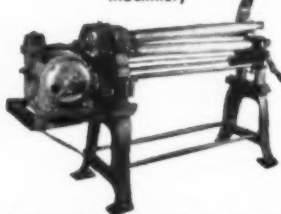
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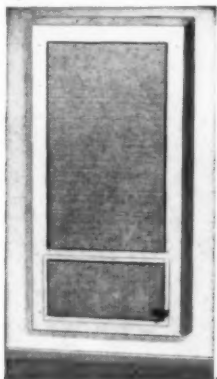
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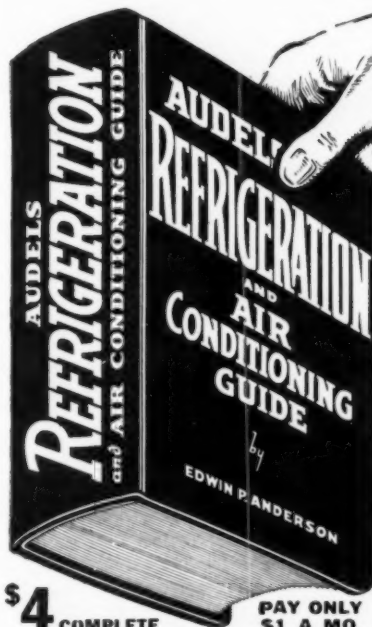
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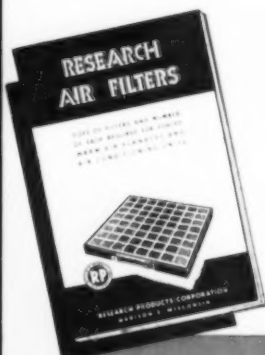
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